THE SUGAR MANUFACTURERS' ASSOCIATION
(of Jamaica)
LIMITED

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ANNUAL REPORT

OF THE

RESEARCH DEPARTMENT

1955

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THE SUGAR MANUFACTURERS' ASSOCIATION (of Jamaica) LIMITED

RESEARCH DEPARTMENT

ANNUAL REPORT, 1955

A. INTRODUCTION AND SUMMARY

1. The Director was on leave in the United Kingdom between the 14th July and 25th October, 1955, in the course of which he visited various agricultural research centres.

The Director and Mr. I. R. Cowan attended the B.W.I. Sugar Technologists' Conference held in Barbados in November/December, 1955, at which they read the following papers:—

(*a*) "Meteorology, Evaporation and the Water Requirements of Sugar Cane," by I. R. Cowan and R. F. Innes.

(*b*) "The Effect of Chlorotic Streak on B4362," by J. T. Edmond, G. M. Wightman and C. E. M. Smith.

(*c*) "Ratoon Stunting Disease in Jamaica," by C. E. M. Smith.

(*d*) "A Survey of the Intensity of Small Moth Borer (*Diatraea saccharalis* F) Infestation in the Sugar Cane of Estates in Jamaica," by T. Chinloy.

The Director attended meetings of the Advisory Committee of the B.W.I. Central Sugar Cane Breeding Station, the B.W.I. Sugar Cane Investigation Committee and the Advisory Committee of the B.W.I. Sugar Research Scheme, held in Barbados in November/December, 1955.

In June 1955 the Director visited Louisiana along with Messrs. I. deF. Smyth of Monymusk and Mr. George Clarke of Worthy Park to report on the use of aqueous ammonia for sugar cane.

2. A total of 3,564,881 tons cane were ground to produce the equivalent of 402,357 tons 96° sugar at 8·86 tons cane per ton 96° sugar. Of this, estates produced 2,181,026 tons cane, or 61% of the island total, whilst 2,181,377 tons were reported as having been produced from 62,840 acres at an average yield per acre of 34·7 tons. The acreage reaped as well as the sugar made and the tons cane per acre set new records.

3. The Cane Yield Survey was continued. The productivity rate again increased and reached the record figure of 6·26 cwt. sugar per acre per month (calculated at a B.H.E. of 100 and a reduced pol extraction of 97%) equivalent to a 4% improvement on last year's figure, the best previous figure. Good weather was largely responsible. Worthy Park maintained and indeed improved upon their remarkable performance of the previous year by producing sugar at the rate of 8·46 cwt. sugar per acre per month, whilst Caymanas, Monymusk and Sevens produced at rates in excess of 7·0 cwt. sugar per acre per month, and Barnett, Bernard Lodge, Innswood, Jamaica Sugar Estates, New Yarmouth, Richmond-Llandovery, Serge Island, United Estates and Vale Royal exceeded 6·0 cwt. sugar per acre per month.

4. The survey returns confirm the superiority of B41227, B4362 and B42231 over the older commercial varieties and show that the planting of the latter has virtually ceased. Each of the newer varieties exceeded 6·75 cwt. sugar per acre per month.

5. Three per cent. of all fields produced sugar at rates in excess of 10 cwt. sugar per acre per month, whilst the record was 14·6 cwt. sugar per acre per month, or 8·75 tons sugar per acre at twelve months.

6. The fundamental approach to irrigation studies has been continued. Evaporation and transpiration have been predicted from meteorological data with an accuracy of 97%.

7. The relationship between transpiration and evaporation has been evaluated and shown to be a constant one.

8. Sugar cane elongation studies have been used to calibrate maximum permissible soil deficits on one sugar estate and the values obtained, used for the practical control of irrigation interval. These studies are being continued both in experiments and on a field to field basis.

9. The merits of surface *vs.* overhead irrigation are being examined.

10. The optimum method of distributing surface irrigation water on heavy clay soils is being studied.

11. The general level of fertilizer application on sugar estates is being maintained, and improved in the case of potash. Control fertilizer experiments have been continued as has general fertilizer advisory work.

12 Data have been obtained from which it appears desirable to examine the late application (i.e. at 5–6 months) of extra nitrogen.

13. Studies have been continued on the use of aqueous ammonia as a source of nitrogen. The results to date are not encouraging.

14. The composition of the stalk as a nutrient index tissue is being examined. The results so far, have proved discouraging.

15. The results of variety selections are presented. It would appear that new varieties may be available which could be used along with B41227, B4362 and B42231 without loss of yield, but further ratoon trials need to be analysed before this can be stated with certainty.

16. Of the imported foreign varieties, H37/1933 from Hawaii is showing signs of doing remarkably well under irrigated conditions and it deserves careful watching. The South African variety, NCo310, also shows promise.

17. Investigations on seedling raising have been carried out, as a result of which it is believed that much of the difficulties encountered formerly, have been eliminated.

18. The extension of newer varieties is bringing mosaic under control. Caution is given about extending susceptible varieties.

19. The incidence of Chlorotic Streak is increasing. B4362 is particularly susceptible. Yield losses due to the disease have been determined and shown to be capable of serious proportions. Secondary infection has been shown to be very high in some areas. Control is discussed.

20. The presence of ratoon stunting disease has been definitely established and losses, even in plant cane, shown to be significant and considerable in the case of Co421.

21. A Ratoon Stunting and Chlorotic Streak survey was commenced and abandoned because of the lethal effects of heat treatment on autumn sett material.

22. Seedling Blight of sugar cane was shown to be due to seed borne *Helminthosporium sacchari*.

23. The fungicidal treatment of setts was examined and shown to be of little value in spring plants. No response in yield could be detected from any growth stimulating effects of the chemicals used.

24. A sample survey for Moth Borer was repeated on the estates which showed the highest infestation in 1954.

25. A weed survey of some estates was commenced and the main chemical weedicides evaluated in the area of the survey. The esters of 2-4D were generally the most effective.

26. Cultivation experiments have dealt with the management of heavy clay soils, the width of row spacing, the cultivation of alluvial soils under irrigation, the value of trash stripping and the procedure of earthing young cane.

27. Weekly and Final factory reports have been collected, checked and circulated, and the data presented in summarized form.

28. Much help and co-operation has been received from all estates.

B. PRODUCTION

For the first time, more than 400,000 tons of 96° sugar were produced, an increase of 34,700 tons over the 1954 crop. This was achieved almost entirely as a result of greater productivity per acre which has increased in the last ten years from approximately 5·5 cwt. sugar per acre per month to last year's record figure of 6·26. This increased rate of production has taken place despite the extension of much of the industry on to lands of relatively lower fertility and in the last year, in spite of the return of some of the best land to bananas. The trend back towards bananas will increase in importance during the immediate future as a result of which a decline in average productivity can only be avoided by improving much of the land which will still remain in sugar cane. Such improvement will primarily bring around the better use of irrigation water and the better physical management of heavy soils, including attention to be paid to minimizing damage arising from current systems of cane transport. The improvement in the last ten years has been most noticeable in the case of Barnett, Hampden, Long Pond, Richmond-Llandovery, Sevens, United Estates, Vale Royal and Worthy Park.

C. CLIMATE

Southern irrigated estates received about 4 inches less rain than average. The year was characterized by a dry spring and a dry approach to reaping. The May rains were late and the October and November rains disappointing, so that heavier than average demands were made upon irrigation, except during the summer and September.

Estates in Group B suffered by having an extremely dry year, receiving nearly 20 inches less rain than average. The average rain of 67 inches would not have been very adverse had the April and November rains not been particularly disappointing. The latter helped somewhat towards producing the better juices with which the 1956 crop is expected to commence. The failure of the November rain was particularly acute at Frome and must have curtailed the 1956 crop significantly.

The very low April and May rains received by the Trelawny and St. James estates (Group C) seriously affected ratoons and spring plants, but this was retrieved by the much better than average distribution between June and October inclusive.

At Richmond-Llandovery the annual rainfall was not only deficient but distributed much worse than average. In spite of this, but thanks to the scientific use of overhead irrigation as a supplement to surface irrigation, the production for 1956 shows every sign of being a record.

At Gray's Inn, the 1956 crop suffered a setback from an excessively dry March, April, May and August, whilst the juice quality of the 1955 crop of both Gray's Inn and Jamaica Sugar Estates was poorer than average due to the excessive rains of February.

The estates of Group G (United Estates and Worthy Park), although receiving less than average rain, were blessed by a very good distribution between mid-April

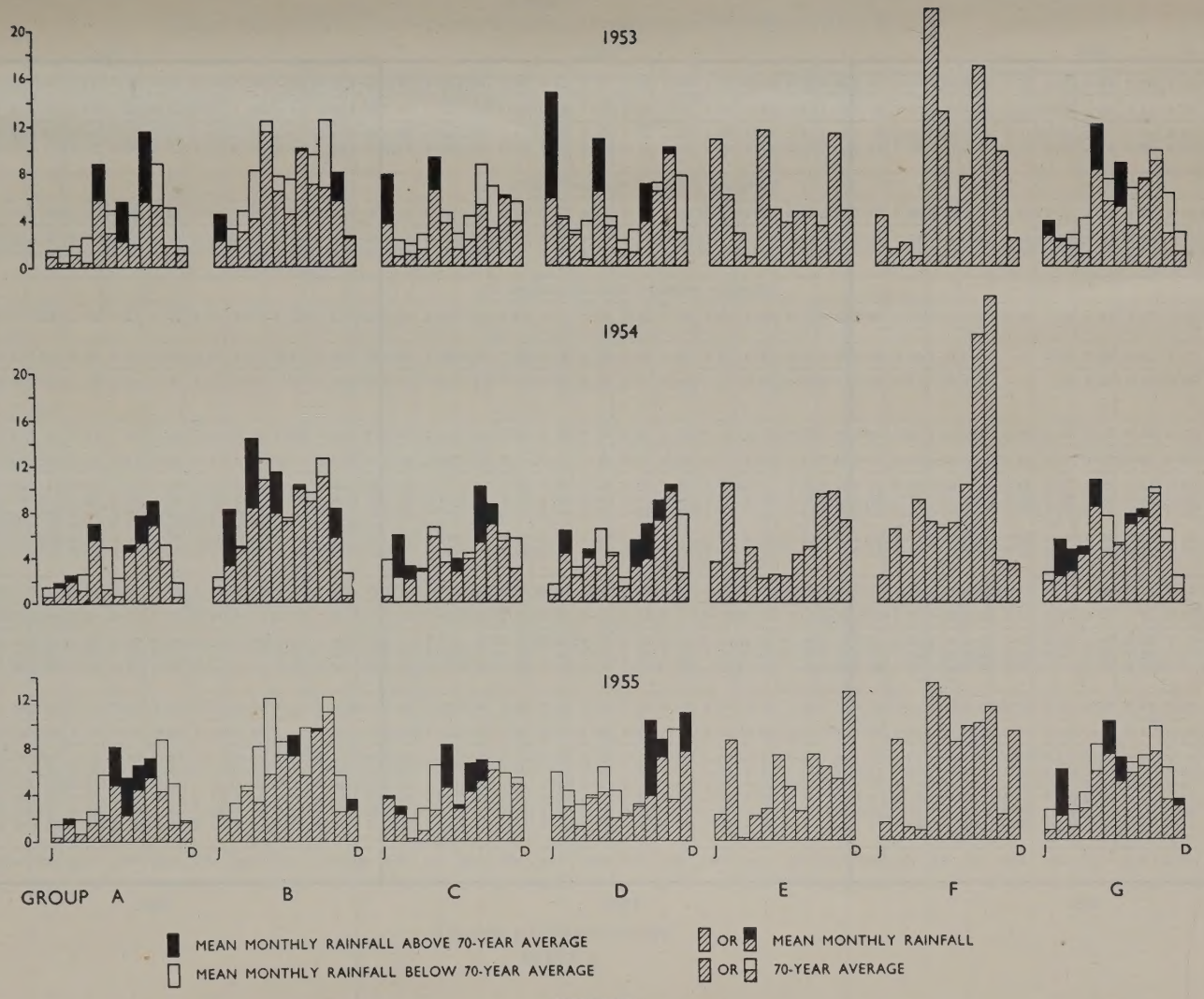
1953
1954
1955
20
16
12
8
4
0
J
D
GROUP A
B
C
D
E
F
G
MEAN MONTHLY RAINFALL ABOVE 70-YEAR AVERAGE
MEAN MONTHLY RAINFALL BELOW 70-YEAR AVERAGE
OR MEAN MONTHLY RAINFALL
OR 70-YEAR AVERAGE

FIGURE 1

TABLE I

Average Rainfall—Inches

	1953												1954												1955											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
GROUP A:																																				
Caymanas ..	1·40	nil	1·04	0·26	5·34	2·18	1·51	2·17	8·30	4·16	2·53	1·31	0·88	1·50	2·17	1·05	6·16	0·62	0·68	6·40	4·74	7·16	2·78	nil	0·22	2·02	nil	2·81	2·05	7·26	3·03	6·87	6·81	4·10	1·21	1·37
Bernard Lodge ..	0·46	0·13	0·78	0·18	5·86	1·42	1·49	1·29	8·24	3·66	1·10	0·78	0·53	1·42	2·78	0·35	4·21	0·30	0·14	3·53	5·51	4·85	1·81	nil	0·59	1·51	0·38	1·38	3·02	6·23	4·17	4·70	5·82	3·05	2·46	0·27
Innswood ..	0·97	0·96	0·45	1·37	8·91	1·93	4·81	1·43	9·96	9·02	1·78	1·28	1·07	3·05	3·17	2·28	5·22	0·13	0·31	7·41	7·20	9·08	8·44	0·32	0·47	2·79	0·36	1·09	2·17	4·63	5·68	7·14	12·93	4·60	1·26	1·43
Monymusk ..	0·82	0·19	1·05	0·11	12·16	3·73	6·89	1·39	13·53	4·28	0·86	1·14	0·07	1·44	1·78	0·37	7·23	2·63	0·58	3·57	8·14	6·05	2·37	1·70	0·64	1·96	0·38	0·79	1·50	10·53	5·67	4·98	6·60	3·51	1·80	2·07
New Yarmouth ..	1·04	0·55	1·00	0·18	10·24	2·18	10·45	1·74	17·34	4·22	1·82	0·91	0·31	1·03	1·31	0·94	7·11	1·23	0·60	3·18	9·54	6·39	1·70	0·52	0·52	0·92	0·79	1·16	1·07	11·20	7·57	10·01	3·39	5·40	1·35	2·59
Sevens	1·21	0·33	2·01	0·25	9·84	4·18	7·94	2·17	12·09	5·99	3·53	1·52	0·65	2·31	2·53	2·19	11·26	2·07	1·78	5·52	11·25	6·45	4·51	0·35	0·17	3·01	2·13	2·30	4·07	8·10	6·25	5·10	6·79	5·06	1·08	2·41
MEANS	0·98	0·36	1·06	0·39	8·73	2·87	5·52	1·86	11·38	5·22	1·94	1·15	0·59	1·79	2·29	1·20	6·87	1·16	0·68	4·94	7·73	6·66	3·60	0·48	0·44	2·04	0·67	1·59	2·31	7·99	5·40	6·47	7·06	4·29	1·53	1·69
70-YEAR MEANS ..	1·53	1·47	1·90	2·58	5·73	4·79	2·15	4·44	5·54	8·72	4·99	1·79	1·53	1·47	1·90	2·58	5·73	4·79	2·15	4·44	5·54	8·72	4·99	1·79	1·53	1·47	1·90	2·58	5·73	4·79	2·15	4·44	5·54	8·72	4·99	1·79
GROUP B:																																				
Appleton	3·11	0·80	4·36	3·98	9·86	4·69	2·73	12·86	8·87	8·66	9·32	1·91	1·81	10·07	2·80	13·73	8·79	8·67	1·51	11·31	7·73	11·01	8·83	0·87	2·22	1·86	5·21	3·69	6·58	11·15	12·13	6·44	12·44	10·92	4·45	3·60
Holland	5·24	2·32	1·08	2·21	13·82	7·59	5·70	6·75	5·61	4·47	10·42	1·84	1·22	6·87	5·17	12·18	7·58	5·90	7·59	9·72	7·76	11·05	10·96	0·33	3·05	1·05	2·85	2·83	6·03	5·81	6·55	4·39	11·85	10·37	2·31	4·10
Frome	4·24	1·88	3·12	5·73	10·16	6·68	4·89	10·20	6·12	6·78	3·85	3·37	0·71	3·85	5·93	15·88	14·80	12·73	11·66	9·00	10·19	11·03	4·25	0·63	1·20	2·52	4·73	3·51	7·39	5·30	8·34	5·88	4·43	11·80	0·72	2·97
MEANS	4·19	1·67	2·85	3·97	11·28	6·32	4·44	9·94	6·87	6·64	7·86	2·37	1·25	6·93	4·63	13·93	10·39	9·10	6·92	10·01	8·56	11·03	8·01	0·61	2·16	1·81	4·26	3·34	6·67	7·42	9·01	5·57	9·57	11·03	2·49	3·56
70-YEAR MEANS ..	2·18	3·17	4·67	8·08	12·22	7·64	7·26	9·73	9·41	12·27	5·63	2·59	2·18	3·17	4·67	8·08	12·22	7·64	7·26	9·73	9·41	12·27	5·63	2·59	2·18	3·17	4·67	8·08	12·22	8·48	7·26	9·73	9·41	12·27	5·63	2·59
GROUP C:																																				
Barnett	5·20	0·80	0·96	4·06	9·02	4·75	3·74	3·43	10·62	2·48	4·01	3·52	0·25	6·25	4·12	2·93	12·76	1·37	5·18	2·78	13·65	7·11	2·62	2·92	3·39	1·11	nil	0·26	2·78	7·21	3·46	9·41	8·18	7·54	2·01	4·16
Rose Hall ..	7·80	1·46	1·01	0·07	6·16	2·93	0·53	0·91	9·04	5·16	4·85	2·01	0·94	3·82	1·81	1·38	2·33	1·79	1·25	2·18	8·52	8·60	6·98	2·67	3·14	2·84	0·06	0·56	1·88	9·50	1·54	5·36	7·88	4·46	1·43	4·12
Green Park ..	6·33	nil	nil	0·27	8·63	4·58	0·33	0·72	8·92	4·19	5·68	3·87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hampden ..	6·56	0·99	0·75	1·66	8·86	4·21	1·59	5·25	10·42	3·78	4·54	4·32	1·48	6·38	2·52	3·41	6·44	7·40	5·37	5·52	14·52	6·87	6·43	1·97	4·68	2·17	0·23	0·94	4·13	11·04	3·83	5·95	8·02	6·62	2·11	5·24
Long Pond ..	9·27	0·40	0·79	0·87	9·59	1·65	1·09	0·92	6·38	1·33	7·48	3·98	0·52	5·66	2·32	2·77	3·83	2·91	2·47	4·30	7·02	8·44	4·82	2·88	3·42	4·21	nil	1·36	1·80	7·29	3·00	5·18	4·96	4·10	2·29	4·38
Vale Royal ..	11·25	0·25	1·69	1·17	12·33	3·42	1·34	2·03	5·62	2·16	9·02	4·42	1·00	6·08	3·05	3·40	4·69	3·85	3·58	3·93	5·65	10·21	5·39	3·78	4·59	4·26	0·09	1·10	1·64	5·77	3·22	7·24	5·47	7·11	3·00	6·30
MEANS	7·74	0·78	1·04	1·35	9·10	3·59	1·44	2·21	8·50	3·18	5·93	3·69	0·84	5·64	2·76	2·78	6·01	3·46	3·57	3·74	9·87	8·25	5·25	2·84	3·84	2·92	0·08	0·84	2·45	8·16	3·01	6·63	6·90	5·97	2·17	4·84
70-YEAR MEANS ..	3·62	2·15	1·91	2·66	6·44	4·52	2·71	4·19	5·12	6·72	5·76	5·43	3·62	2·15	1·91	2·66	6·44	4·52	2·71	4·19	5·12	6·72	5·76	5·43	3·62	2·15	1·91	2·66	6·44	4·52	2·71	4·19	5·12	6·72	5·76	5·43
GROUP D:																																				
Richmond/Llandovery	14·50	3·86	2·62	0·47	10·59	3·33	1·30	1·11	6·82	6·19	9·88	2·82	2·95	6·10	2·17	4·44	2·93	3·86	1·30	5·20	6·57	8·63	9·93	2·50	2·04	2·79	0·98	3·46	4·01	1·92	1·96	2·75	10·08	8·48	3·39	10·84
70-YEAR MEANS ..	5·69	4·06	2·88	3·69	6·18	4·06	2·06	2·97	3·71	6·87	9·39	7·46	5·69	4·06	2·88	3·69	6·18	4·06	2·06	2·97	3·71	6·87	9·39	7·46	5·69	4·06	2·88	3·69	6·18	4·06	2·06	2·97	3·71	6·87	9·39	7·46
GROUP E:																																				
Gray's Inn C. ..	10·59	5·92	2·71	0·66	11·40	4·69	3·62	4·53	4·51	3·29	11·13	4·61	3·38	9·92	2·75	4·64	1·97	2·25	2·23	4·03	4·68	9·19	9·39	6·91	2·40	8·68	0·41	2·28	2·80	7·36	4·65	2·62	7·49	6·48	5·35	12·75
																N	o sat	isfact	ory lo	ng av	erage	s ava	ilable													
GROUP F:																																				
Jam. Sug. Ests. ..	4·71	1·77	2·88	0·88	19·02	15·49	4·52	8·84	14·73	11·69	13·62	2·88	3·12	9·58	5·06	11·01	4·70	8·45	5·56	7·06	21·09	27·42	3·49	3·86	1·51	11·08	1·73	0·77	16·99	8·46	6·20	10·65	10·22	11·42	3·19	10·65
Serge Island ..	3·64	0·87	0·88	0·60	24·13	10·31	5·00	6·17	18·92	9·76	5·65	1·92	1·21	2·69	2·80	6·18	8·92	4·10	7·88	12·80	24·01	24·18	3·57	2·27	1·32	5·84	0·16	0·69	9·68	15·96	10·42	8·62	9·47	11·27	0·93	7·71
MEANS	4·17	1·32	1·88	0·74	21·57	12·90	4·76	7·50	16·82	10·72	9·63	2·40	2·16	6·13	3·93	8·59	6·81	6·27	6·72	9·93	22·55	25·80	3·53	3·07	1·42	8·46	0·95	0·73	13·34	12·21	8·31	9·64	9·84	11·34	2·06	9·18
70-YEAR MEANS																N	o sat	isfact	ory lo	ng av	erage	s ava	ilable													
GROUP G:																																				
United Estates ..	4·18	2·20	0·95	1·71	11·51	5·35	10·27	3·61	6·74	8·05	1·49	1·14	2·11	4·34	4·88	6·06	9·47	4·82	6·18	8·81	8·04	8·62	4·16	1·07	0·85	6·74	1·11	2·49	6·51	9·24	8·16	6·28	6·16	6·77	3·95	3·77
Worthy Park ..	3·20	2·16	2·99	0·27	12·28	5·36	7·07	3·13	7·95	9·91	4·14	1·39	1·29	6·28	3·85	3·37	11·26	3·42	3·39	7·14	7·84	9·82	5·87	1·18	0·74	5·20	0·86	2·98	5·11	10·99	5·87	5·13	6·51	8·22	2·86	3·13
MEANS	3·69	2·18	1·67	0·99	11·89	5·35	8·67	3·37	7·34	8·98	2·82	1·26	1·70	5·31	4·36	4·72	10·36	4·12	4·78	7·47	7·94	9·22	5·02	1·13	0·79	5·97	0·98	2·74	5·81	10·12	7·02	5·71	6·33	7·49	3·41	3·45
70-YEAR MEANS ..	2·47	2·04	2·62	3·96	8·11	7·26	5·03	6·59	7·16	9·70	6·22	2·88	2·47	2·04	2·62	3·96	8·11	7·26	5·03	6·59	7·16	9·70	6·22	2·88	2·47	2·04	2·62	3·96	8·11	7·26	5·03	6·59	7·16	9·70	6·22	2·88

TABLE II

No. of Days in each Month on which Average Precipitation Exceeded 0·5 Inches

	1953												1954												1955											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
GROUP A: ..																																				
Caymanas ..	1	–	1	–	4	1	1	1	3	4	1	1	–	1	1	–	4	–	–	5	2	5	1	–	–	1	–	1	–	5	1	5	4	2	1	1
Bernard Lodge	–	–	1	–	4	1	–	–	4	2	–	–	–	1	2	–	2	–	–	3	3	3	–	–	–	1	–	1	3	4	3	4	4	2	3	–
Innswood ..	–	1	–	1	6	1	2	1	7	6	1	1	–	2	3	1	3	–	–	5	5	6	5	–	–	2	–	1	1	3	4	4	7	3	–	1
Monymusk ..	–	–	1	–	8	3	3	1	8	3	–	–	–	1	2	–	2	1	–	2	5	5	2	2	–	2	–	–	1	9	3	3	2	2	1	1
New Yarmouth	1	–	1	–	8	1	3	1	9	3	1	–	–	–	1	–	3	1	–	1	7	5	–	–	–	–	1	1	–	9	2	3	1	4	1	2
Sevens ..	–	–	2	–	8	1	4	1	9	5	2	1	–	1	1	–	5	1	1	4	10	5	1	–	–	2	2	2	3	6	–	4	6	3	1	2
GROUP B:																																				
Appleton ..	1	–	3	2	7	5	3	8	3	5	6	1	1	8	2	10	5	6	1	8	6	9	8	1	2	1	3	4	3	9	8	4	10	7	4	2
Holland ..	5	2	1	1	13	5	6	4	5	2	7	1	1	3	5	11	6	5	6	8	2	6	8	–	2	–	2	2	4	5	6	2	8	8	1	3
Frome ..	–	–	3	5	8	4	1	7	5	4	2	2	–	2	4	14	12	10	9	7	8	11	2	–	1	1	2	1	5	2	6	4	2	9	–	1
GROUP C:																																				
Barnett ..	4	–	1	4	6	4	3	2	9	2	1	1	–	3	3	3	10	1	5	3	8	6	1	2	1	–	–	–	3	6	2	10	6	6	2	2
Rose Hall ..	6	1	–	–	3	1	–	–	7	3	3	1	–	2	1	–	2	–	–	1	6	6	6	1	2	1	–	–	1	4	1	5	6	4	–	2
Green Park ..	3	–	–	–	7	5	–	2	7	2	5	4	–	4	2	3	5	No longer in operation							–	–	–	–	–	–	–	–	–	–	–	–
Hampden ..	4	–	–	1	7	2	–	2	7	3	3	3	1	5	1	1	4	7	4	4	7	5	5	1	3	1	–	–	4	5	3	3	6	4	1	4
Long Pond ..	5	–	1	–	8	–	–	–	5	1	6	2	–	3	1	1	2	–	2	1	3	5	4	2	10	2	–	1	–	5	2	2	3	3	2	4
Vale Royal ..	8	–	1	–	11	2	–	1	3	1	7	2	–	3	2	2	1	2	1	1	3	9	3	2	12	3	–	–	–	4	3	5	3	3	1	4
GROUP D:																																				
Richmond/ Llandovery ..	4	3	2	–	4	2	–	–	3	3	5	1	1	4	2	3	2	2	1	3	4	9	7	2	1	2	–	1	2	2	1	1	5	6	3	5
GROUP E:																																				
Gray's Inn C. ..	7	2	2	–	4	2	2	5	3	3	6	2	2	4	1	5	1	1	1	2	2	5	5	2	1	1	–	1	2	4	2	2	3	3	1	9
GROUP F:																																				
Jam. Sug. Ests.	4	–	1	–	10	2	4	5	11	7	5	1	2	7	3	2	3	5	2	5	7	11	1	1	2	4	–	–	6	6	4	6	8	8	2	7
Serge Island ..	3	–	–	–	10	3	5	4	13	5	3	1	1	1	1	3	5	3	5	8	13	12	3	2	1	4	–	–	4	8	7	5	5	7	–	5
GROUP G:																																				
United Estates	4	1	–	1	8	2	4	1	3	7	–	–	1	3	3	4	6	3	4	7	4	5	2	–	–	5	–	1	3	5	5	5	4	4	2	3
Worthy Park ..	2	1	1	–	7	3	2	2	3	6	4	–	1	3	2	1	3	2	3	6	4	8	4	–	–	4	–	2	3	6	4	4	5	5	3	1

and December, and each estate will probably produce record yields in 1956.

Meteorological Data

Weather data have been kept by Monymusk, Jamaica Sugar Estates, Hampden and Worthy Park and thermo-hygrographs by Frome and United Estates. Some of the more interesting comparisons are given graphically in Figures 2, 3, 4 and 5. They indicate the climatic range which exists between some sugar estates. Monymusk receives by far the greatest hours of sunshine, with the two inland estates, Hampden and Worthy Park receiving the least. The Monymusk figures are characterized by particularly high values during the first five months of the year.

The temperature records show pronounced differences between the estates. A detailed study of minimum temperatures, particularly during the months of November to April, coupled with rainfall in the same months, might well correlate with the variations in juice quality in the different ecological areas. The evaporation figures, with which the water requirements of cane are highly correlated, show the marked seasonal nature of the water demand in the case of Monymusk and Hampden, and generally, the influence of sunshine upon evaporation, except during the early part of the year at Monymusk and the modifying effects of heavy rainfall in some months, at Jamaica Sugar Estates.

D. IRRIGATION

The study of the evapo-transpiration approach to irrigation control has proceeded along the lines indicated in the last Annual Report. The theoretical basis of the method has been established for Jamaican conditions and the problem is now one of practical application.

(1) Open Water Evaporation

Mean monthly values of meteorological data at Monymusk in the period April 1954 to March 1955 have been used to estimate values of open water evaporation. Various formulae have been examined, and the results are shown in Table III. The agreement between estimates made using Penman's equation and observed values of open water evaporation is extremely good; much better than estimates made with the empirical relations developed by other workers. The excellent correlation between estimated values of short wave radiation and open water evaporation shows that the success of Penman's equation under Jamaican conditions lies in the correct evaluation of the radiation factor. The equation accounts for 97% of the variation in evaporation.

(2) Relation between open water evaporation and evapo-transpiration from cane

Work done by Penman in temperate latitudes indicates that the evaporation from an area of green vegetation (E_t) is controlled by meteorological factors in a similar manner to open water evaporation (E_o), and that there is a relation:—

$$E_t = fE_o$$

where 'f' is a factor largely independent of crop characteristics, but varying with day length.

A previous report indicated a method in which partial regressions of cane growth rate on accumulated values of open water evaporation and precipitation could be used to evaluate the factor of 'f'. A mean value of 'f' = 0·58 was obtained in a field experiment.

A new type of lysimeter was developed and used to measure the evapo-transpiration rate from a cane stool under conditions simulating as nearly as possible normal field conditions. Twenty-four stools were examined individually in this way. The experiment was started in mid-November 1954 when the cane was only a few weeks old and a leaf canopy had barely started to form. During the last two weeks of November the consumption of water was negligible. From the beginning of February until mid-January the rate of consumption increased as the leaf canopy closed in. From mid-January to May, when the leaf canopy was complete the cane used water at 0·58 the rate of an open water evaporation surface. This experiment was recommenced in November and results so far confirm the previous findings.

It appears therefore that cane evaporates water at a little less than six-tenths the rate of an open water surface. The indications are that seasonal fluctuations in the relationship are negligible, hence the daily rates of evaporation from cane can be estimated throughout the year. The mean of four years' record at Monymusk are:—

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Mean
Open water evaporation (inch per day)	0·15	0·19	0·22	0·25	0·25	0·23	0·25	0·24	0·19	0·17	0·16	0·15	0·20
Six-tenths open water evaporation (inch per day)	0·09	0·11	0·13	0·15	0·15	0·14	0·15	0·14	0·11	0·10	0·10	0·09	0·12
Six-tenths open water evaporation (cubic yards per acre per hour)	0·49	0·62	0·73	0·84	0·84	0·78	0·84	0·78	0·62	0·56	0·56	0·49	0·67

The figures for cubic yards per acre per hour are illuminating when compared with the irrigation water being used by irrigated sugar estates. In general, they would suggest that current surface systems of distribution are only one-third efficient.

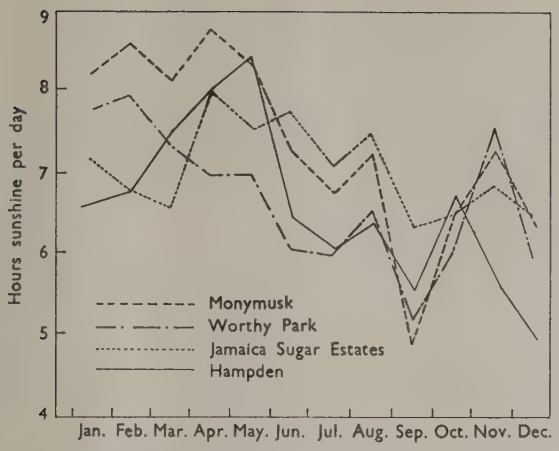

FIGURE 2

Sunshine Hours for Hampden, Jamaica Sugar Estates, Monymusk and Worthy Park

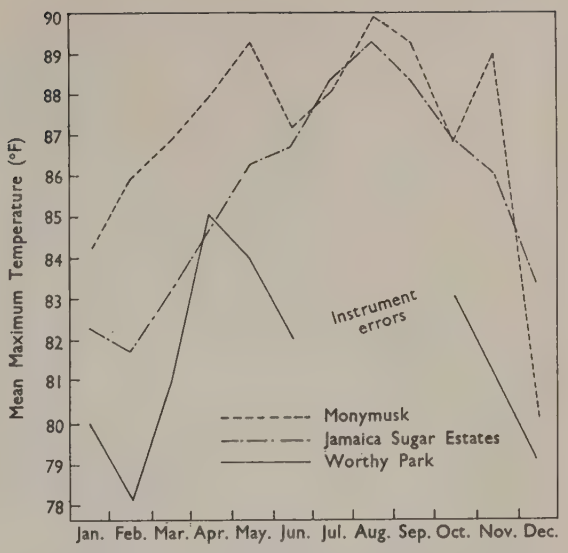

FIGURE 3

Mean Maximum Temperature (°F) for Jamaica Sugar Estates, Monymusk and Worthy Park

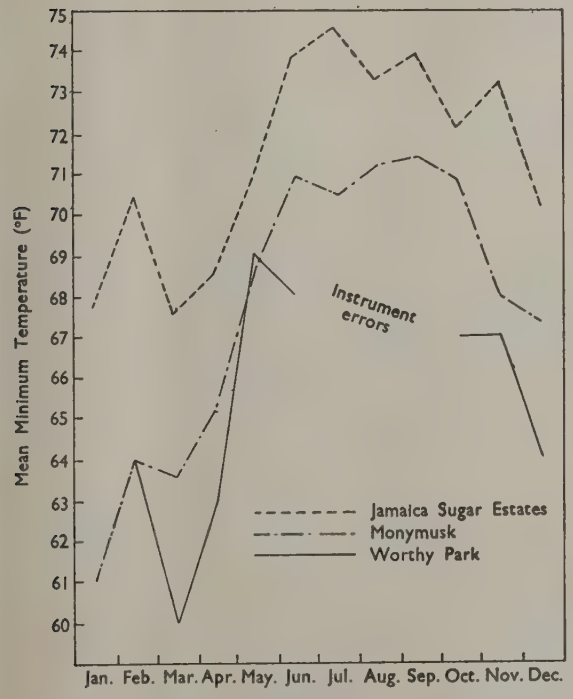

FIGURE 4

Mean Minimum Temperature (°F) for Jamaica Sugar Estates, Monymusk and Worthy Park

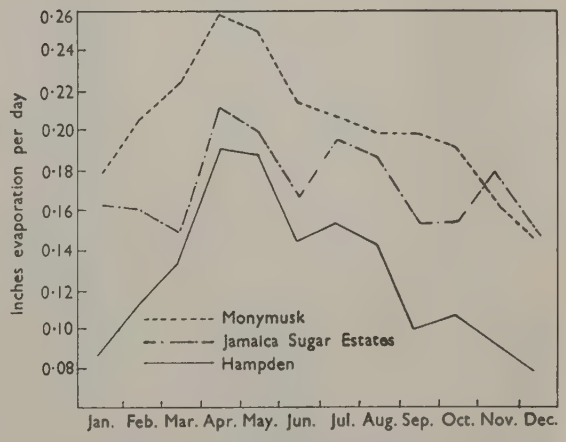

FIGURE 5

Inches Daily Evaporation for Hampden, Jamaica Sugar Estates and Monymusk

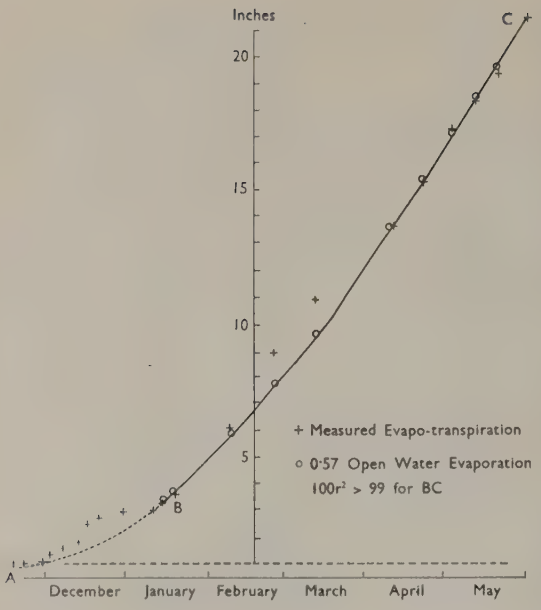

FIGURE 6

(3) The optimum soil moisture deficit at which to irrigate

The soil moisture deficit within the root zone of a crop may be defined as:—

$$D = f E_o - P$$

where the summations extend from the time when the soil was last at field capacity, and 'f' has the value 0·6 for Jamaica. For a particular soil and depth of rooting, the deficit is a function of the soil moisture stress integrated through the depth of the root range, and is related to the growth conditions of the crop.

Formal field experiments have been carried out at Richmond and Monymusk Estates to determine the relation between cane and sugar yield, and the average soil moisture deficit. Unfortunately, unusually heavy and well distributed rains during the course of the experiments prevented the deficits on the drier treatments from often attaining the upper limits set, and no significant differences in yield were obtained. The results however, do indicate that both on a clayey soil overlying a fairly well-structured calcareous soil at Richmond, and on a medium clay soil at Monymusk (on both of which cane roots are observed to reach a depth of 30 inches) yield is not affected when the average value of the deficits encountered during the lifetime of the crop is 1·5 inches.

Measurements of cane growth rate on thirty fields at Richmond Estate embracing the main soil types and varieties, were made during the period September 1954 to March 1955. On nearly all the fields, deficits of 2 inches were occasionally encountered, while on some, deficits reached 3 inches. Growth rate was not affected on any field, hence it is clear that there is no point at Richmond in attempting to maintain deficits, under three-month or more old cane, below a value of less than 2 inches. A similar survey has been carried out at Rose Hall but the results have not yet been analysed.

Three irrigation experiments have been laid down at Monymusk on different soil types to test the effect on yield of different irrigation treatments as regulated by the evapo-transpiration method. Variety and fertilizer sub-treatments have been included.

(4) Surface *vs.* overhead irrigation

The large fall planted (1954) experiment at Caymanas was continued. The plant cane results should be available in 1956. A short account of the experiment was given in the last Annual Report.

(5) The relationship between yield, irrigation and fertilizer requirements

Reference was made to this in last year's Report. The work has been impaired to varying degrees by factors outside experiment control, such as rainfall on the one hand, and irrigation water shortages on the other. The results should be forthcoming in 1956.

(6) Methods of distributing surface irrigation on heavy soils

The investigation is tied up with systems of cultivation or land form, including drainage, on heavy clay soils of poor structure. At Innswood, on heavy marine clay soil plant cane results have shown that watering every other furrow, or putting two rows of cane on 9-ft. banks is as good as the normal procedure of planting on 4 ft. 6 in. banks with irrigation applied down each furrow. Watering alternate furrows by long line irrigation, with the remaining furrows sunk to form drains, showed signs of being the best treatment of all. The ratoon results should be particularly interesting. In plant cane cultivation the results suggest that irrigation in long lines up to five chains long, is feasible without any detriment to yield, and with much convenience in the handling of the water.

The results of a similar trial operated at Windsor Park in St. Catherine should be available in 1956.

(7) Supplementary overhead irrigation

It is becoming more evident that supplementary overhead irrigation may be very well worth while on many estates in order that plants may be established as early as possible during the year and in order to stimulate early ratoon stubble. The practice is well established at Frome. The Departments' overhead irrigation unit is to be moved to Jamaica Sugar Estates to evaluate the benefits to be derived under their conditions. A study of rainfall and evapo-transpiration suggests that Barnett, Appleton, Holland, Jamaica Sugar Estates and Serge Island should be particularly interested in these effects in an average year.

TABLE III

Months	Mean temperature (°F.)	Mean humidity (%)	Wind Speed (miles/day)	Sunshine (hrs./day)	Possible sunshine (hrs./day)	Daily radiation in the absence of an atmosphere (units of heat required to evaporate one mm. of water)	Measured open water evaporation (Inches)	Penman's estimated open water evaporation (ins.)	Measured open water evaporation (ins./day)	Equation (VI) Penman's estimated open water evaporation (ins./day)	Equation (V) Thornthwaite's potential evapo-transpiration (ins.)	Equation (1) Blaney & Criddle's monthly consumptive use factor (F)	Baver's $\frac{T^2}{1000}$	0·786 R_c
Jan. ..	72·9	74·4	85	8·22	11·18	11·3	5·51	5·25	0·18	0·17	4·06	5·70	5·31	5·78
Feb. ..	73·6	78·5	109	8·61	11·56	12·7	5·77	5·54	0·21	0·20	4·05	5·37	5·42	6·52
Mar. ..	72·8	79·7	108	7·88	12·02	14·3	6·93	6·52	0·22	0·21	4·32	6·13	5·30	6·81
Apr. ..	78·1	78·9	132	7·61	12·55	15·3	7·50	7·36	0·25	0·25	7·00	6·64	6·10	6·97
May ..	79·5	79·9	122	8·34	12·97	15·8	8·19	8·03	0·26	0·26	8·94	7·22	6·32	7·34
June ..	80·4	80·2	72	7·73	13·19	15·8	7·28	7·30	0·24	0·24	8·88	7·17	6·46	7·08
July ..	80·7	78·2	135	8·27	13·10	15·8	8·24	8·27	0·27	0·27	9·37	7·38	6·51	7·34
Aug. ..	79·4	80·1	108	7·91	12·73	15·4	7·52	7·58	0·24	0·24	8·12	7·07	6·30	7·07
Sept. ..	78·9	85·0	94	6·17	12·24	14·7	6·04	6·22	0·20	0·21	7·31	6·53	6·23	6·05
Oct. ..	78·6	86·4	78	6·69	11·74	13·4	5·99	6·07	0·19	0·20	7·06	6·45	6·18	5·87
Nov. ..	75·6	82·3	69	8·15	11·30	11·8	5·08	5·34	0·17	0·18	5·09	5·79	5·71	5·09
Dec. ..	75·6	78·2	83	8·66	11·07	10·9	5·28	5·37	0·17	0·17	5·14	5·85	5·71	5·78
					TOTAL ANNUAL:—		79·33	78·87	—	—	79·34	77·29	71·55	79·50

TABLE IV

CORRELATIONS BETWEEN EVAPORATION AND ESTIMATES OF EVAPORATION

	r	$r^2 \times 100$*
Penman	0·985	97
0·786 R_c	0·943	89
Blaney & Criddle	0·859	74
Thornthwaite	0·788	62
Baver	0·648	42

*NOTE.—$r^2 \times 100$ is the extent to which derived estimates of monthly evaporation agree with the measured figures.

E. NUTRITION

(1) The fertilizer practices of sugar estates

A summary of the fertilizers applied and the manner in which they were used is given in Tables IV and V:—

TABLE IV

FERTILIZERS USED

Class	NITROGEN				PHOSPHATE				POTASH			
	Acres fertilized	Tons N used	Mean lbs./acre	Acres fert. % total acres	Acres fertilized	Tons P_2O_5 used	Mean lbs./acre	Acres fert. % total acres	Acres fertilized	Tons K_2O used	Mean lbs./acre	Acres fert. % total acres
Fall plants	3543	131·56	83	97	615	8·72	32	17	2252	84·16	84	62
Spring plants ..	8497	304·88	80	99	916	16·56	40	11	3441	137·90	90	40
1st ratoons	13086	456·24	78	98	1539	21·02	31	11	6603	245·83	83	49
2nd ratoons	13072	448·81	77	99	964	11·02	26	7	7036	288·61	92	53
3rd ratoons	8624	286·59	74	98	887	9·73	25	10	4988	201·24	90	57
Old canes ..	14928	531·77	80	98	1275	11·03	19	8	7718	281·37	82	51
Total ..	61750	2159·85	78	98	6195	78·08	28	10	32011	1239·11	87	51
Previous years comparison:												
1954			77	94			27	9			85	42
1953			76	97			31	9			87	43
1952			80	97			37	8			89	38
1951			76	96			37	8			96	35
1950			77	95			28	19			79	32

TABLE V

MEAN LBS. PER ACRE APPLIED IN 1955 FOR ECOLOGICAL AREAS

Ecological areas	Class	N	P_2O_5	K_2O
Wet West Estates	Plants	56	45	99
	Ratoons	60	31	94
North Coast Estates	Plants	32	11	81
	Ratoons	32	12	83
Irrigated Estates	Plants	101	19	78
	Ratoons	100	19	71
Wet East Estates	Plants	78	21	77
	Ratoons	87	28	81
Central Estates	Plants	72	28	87
	Ratoons	64	27	90

The average fertilizer consumption per ton of sugar cane works out at 2·22 lb. Nitrogen, 0·08 lb. P_2O5 and 0·90 lb. K_2O, whilst in Hawaii the figures are on the average of the order of 1·80 lb. N, 0·57 lb. P_2O5 and 1·8 lb. K_2O. The apparently better utilization of nitrogen in Hawaii is interesting and is probably related to the Hawaiian soils being better rooting media, to their greater ability to retain nitrate ions against leaching and to the biennial nature of Hawaiian cropping. The much lower consumption per ton of cane of phosphate and potash in Jamaica is undoubtedly a soil characteristic in which the Jamaican industry is fortunate, nearly all the sugar soils being adequately supplied with available phosphate and most of the alluvial soils adequately supplied with available potash.

In Jamaica the nitrogen applications per acre in recent years have shown little variation, all the fields being fertilized. Although the potash applied per acre has also remained fairly constant, the area receiving potash has increased steadily so that at the present time more than one half the area in cane receives potash. This is a feature which will have to keep pace with the increased cane returns per acre so that an even higher proportion of our lands should receive potash. Especially so must this be the case if high yield levels are to be maintained in ratoons. The stress upon ratooning as the answer to cheaper cane is sound but it can be jeopardised by a policy of withholding essential quantities of fertilizer, and this should be borne in mind.

The ratio of potash to nitrogen applied to cane fields shows wide variations as Table VI indicates:—

TABLE VI

THE APPROXIMATE RATIO OF K_2O/N APPLIED ON ESTATES

Appleton	1·4	Long Pond	2·0
Barnett	1·4	Richmond/Llandovery	1·1
Caymanas	0·8	Serge Island	1·0
Frome	1·7	United Estates ..	1·2
Hampden	4·0	Vale Royal	3·1
Holland	1·2	Worthy Park	1·6
Innswood	1·0		

The very high ratios are associated with ground water lateritic soils. If yields continue to rise, the ratios will also need to rise on estates where they are at present near one.

(2) Fertilizer advisory work

One hundred and forty fertilizer experiments were operated during the year, distributed as in Table VII:—

TABLE VII

No. and Distribution of Fertilizer Experiments in Operation during 1955

	Fall Plants			Spring Plants		Ratoons			
	Planted 1953	Planted 1954	Planted 1955	Planted 1954	Planted 1955				
	Reaped 1955	To be reaped 1956	To be reaped 1957	Reaped 1955	To be reaped 1956	Reaped 1955			Total
						1st	2nd	3rd	
Northern Division:									
Barnett	–	–	–	–	5	–	1	–	6
Hampden	–	–	–	–	–	–	–	–	–
Long Pond	–	2	–	–	5	1	–	–	8
Richmond/Llandovery	1	–	–	1	14	1	1	–	18
Rose Hall	–	–	–	2	9	1	–	–	12
Vale Royal	–	–	–	–	5	1	–	–	6
Central Division:									
Appleton	–	–	–	–	13	1	–	–	14
Frome	1	–	–	2	5	1	10	–	19
Holland	–	–	–	–	–	–	1	–	1
Monymusk	–	–	–	–	21	–	3	1	25
New Yarmouth	–	–	–	–	–	–	1	–	1
Sevens	–	–	–	–	–	1	1	–	2
Eastern Division:									
Bernard Lodge	–	–	–	–	1	–	–	–	1
Caymanas	–	1	1	–	–	1	2	–	5
Gray's Inn Central	–	–	–	–	–	–	–	–	–
Innswood	–	–	–	–	–	1	0	1	2
Jamaica Sugar Estates	–	–	–	1	–	3	–	1	5
Serge Island	–	–	–	–	1	1	–	–	2
United Estates	–	–	–	–	1	4	1	–	6
Worthy Park	–	–	–	–	7	–	–	–	7
Totals	2	3	1	6	87	17	21	3	140

Note.—In the above table, any dispersed block experiments (consisting of three blocks each) have been counted as one experiment.

The increased number of fertilizer experiments operated by the Department during 1955 is accounted for partly by the policy of splitting formal experiments into their constituent blocks, increasing plot size thereby in many instances, and thus making it possible for estates personnel to take an increasing part in reaping experiments.

The results of experiments have been communicated to the estates concerned and the data interpreted with respect to estates' fertilizer policies.

The experiments have dealt with examining the response of sugar cane to nitrogen, phosphate and potash at three levels and in all combinations, also the subsoil placement of fertilizers on some estates; the evaluation of aqueous ammonia as an alternative source of nitrogen and the measurement of interactions, if any, between level of water supply and plant food response. Advantage has been taken of the experiments in order to evaluate a new technique of fertilizer control.

The correct nutrition of sugar cane on black calcareous soils still remains a problem. In conjunction with the Department, Rose Hall have embarked upon a large programme of laying down single replicates of N P K treatments dispersed over the estate, on plots of a size which are reaped by the estate. The results should be most helpful in determining the best average fertilizer policy until more is known about the fate of fertilizers on these soils.

(3) The value of late applications of nitrogen

Much sugar cane in Jamaica is often a poor colour between six months or so and harvest; yet all the data from experiments carried out on splitting nitrogen applications have shown that, as elsewhere, little is to be gained by the practice. It is possible that the lack of response in the past has been due to the interval between nitrogen applications being too short, viz. three months. Richmond-Llandovery was chosen as a suitable site on which to examine the *late* applications of nitrogen to

sugar cane, advantage being taken of overhead irrigation to apply the equivalent of 1 cwt. per acre of sulphate of ammonia as Urea when the cane was six months old—the risers being paired, one receiving the extra nitrogen and the other none.

The results have shown conclusively (at greater than 100 : 1) that the treatment increased the yield of cane per acre by more than 30% but that cane quality deteriorated by 8%. It seems therefore that there is a case for examining much more critically the nutrition of sugar cane around six months old, and perhaps of instituting a limited crop log. This approach will be explored during the coming year.

(4) The possible use of aqueous ammonia

For sugar cane there is much evidence to show that unit for unit, it matters little in what form nitrogen is applied. As far as the cane plant is concerned, nitrogen applied as aqueous ammonia should be just as utilizable as nitrogen from another source and since the price per unit in this form is much lower than as sulphate of ammonia, *apriori* case could be made for changing to this source. The deciding factor is whether the material can be incorporated in the soil and kept there without loss, either to the air or to drainage. The West Indies Sugar Company in collaboration with this Department, have laid out a series of large scale field experiments to test the raw material under their conditions and this has been extended by this Department to include other soils and other estates. The May and summer rains interfered severely with the laying out of the programme of field experiments and only eleven were completed. More will be laid out in 1956.

The Director visited Louisiana as a member of a team to study the use of aqueous ammonia on sugar cane there. The main difficulties in Jamaica are the presence of trash, the heavy clay nature of a large area of the soils, the interference of rain and irrigation water, the absence on many soils of a highly banked form of cultivation, and the fact that inter-row cultivation in ratoons is not generally practised.

Laboratory studies

(*a*) *Soils at approximately constant moisture content.* Investigations were carried out to examine the loss of ammonia when aqueous ammonia was applied to samples of soils representing the main estates' sugar cane soils. Sweeping the soil surface with a stream of air for seven days gave results from which it was concluded that—

(i) On soils of low ammonia fixing capacity, e.g. lateritic soils, the ammonia lost % ammonia applied was proportional to the quantity applied to the *soil surface* and was greater when applied to a damp surface than to an air dried surface, e.g. 33% was lost from a damp soil when 6 cwt. of aqueous ammonia (20% N) were applied to the surface, whilst the loss was only 10% when 3 cwt. were applied to the air dried soil surface.

(ii) On clay soils of high ammonia fixation powers, the same conclusions held except that losses were reduced to 0·6 of those from the lateritic soils.

(iii) No ammonia losses could be measured when the ammonia was injected at 2-in. and 4-in. depths into any soil, whether damp or air dry. The limitations of the method mean that the losses were obtained from soils under conditions of fairly constant moisture status, and provided such conditions occur in nature, when ammonia is injected 2 in. or more, losses will be of no consequence.

Samples of sugar cane soils were also injected at a depth of 4 in. with aqueous ammonia (20% N) at 6 cwt. per acre and subjected to 25 in. vacuum for seven days. The whole range of sugar cane soils was examined and it was found that—

(i) The losses from air dried soils was nil, except for a very sandy soil, which after 18 days continuous vacuum only lost 1·5%.

(ii) The losses from damp soils was higher, being least for clay and clay loams (losses = 2%) and highest for sandy soils and rendzinas (losses = 13%).

The limitations of both methods mean that losses were measured under near constant moisture conditions with respect to time. *It is therefore safe to conclude that provided tilths are well prepared and the moisture content of the soil remains constant, losses from injected aqueous ammonia will be very low and in most instances of negligible economic importance.*

(*b*) *The losses of ammonia where soils injected with ammonia undergo a series of wetting and drying cycles.* The drying cycle adopted was such as would be followed under good field irrigation control, viz. from field capacity* down to a dryness equal to a pF of 2·82. The treatments involved eight such cycles; four cycles drying out for twice the time interval and two cycles drying out for four times the time interval. The soils were injected at 4 in. with sulphate of ammonia at 4 cwt. per acre, or with aqueous ammonia at the same rate, or had a surface application of ammonium sulphate at the same rate. The results have shown that—

(i) The more frequent the wetting and drying, i.e. the more moisture the soils lose, the greater is the loss of nitrogen as ammonia.

(ii) On non-calcareous light textured soils losses ranged between 23 and 60% from aqueous ammonia as against maximum losses of 10% when sulphate of ammonia was buried and 30% when applied on the surface.

(iii) On non-calcareous heavy textured soils, losses from aqueous ammonia varied between 15% and 44% as against maximum losses of 5% when sulphate of ammonia was buried and 25% when it was broadcast.

* The soils were brought to field capacity by weighing the containers and drainage was avoided, so that no losses can be attributed to drainage.

(iv) The lower recovery of nitrogen from the ammonia treated soils was associated with higher ratios of ammonium to nitrate nitrogen suggesting that losses were partly related to the time for which applied ammonia remained in the ammonia form as a result of the temporary sterilizing effects of ammonia upon the microbiological conversion of ammonia to nitrates.

(v) Nitration was always much faster in the case of sulphate of ammonia than in the case of aqueous ammonia, an observation also in accordance with the temporary sterilizing effects of aqueous ammonia.

(vi) On highly calcareous soils the losses from aqueous ammonia injected and sulphate of ammonia broadcast were similar, the maximum recorded losses being 51 and 50% respectively. Under similar conditions, the loss from sulphate of ammonia buried, was only 18% and could be as low as 7%. The latter figure was obtained when the losses from aqueous ammonia injected, and sulphate of ammonia applied at the surface were 30 and 36% respectively.

(vii) The maximum losses were obtained from calcareous peats, from which 90% of the aqueous ammonia was lost and 80% of the nitrogen from sulphate of ammonia.

The results suggest that under conditions existing in the field, it would be surprising if aqueous ammonia were as effective as sulphate of ammonia and that the value of the latter can be improved by drilling rather than by applying on the surface. The last consideration is likely to be of considerable importance on calcareous soils. The relative value of sulphate of ammonia and aqueous ammonia will fluctuate much from soil to soil and with the moisture conditions prevailing. It is therefore anticipated that a very large volume of field experimentation will need to be completed before any fair average picture of the comparison can be obtained.

The results of field experiments and studies

Leaf nitrogen studies of the experiments laid down by the West Indies Sugar Company at Monymusk suggested that on medium textured soils, free draining and of good structure, the effects of aqueous ammonia drilled into the soil were about 80% as effective as equivalent amounts of sulphate of ammonia applied to the soil surface. On heavy clay soils, aqueous ammonia drilled into the soil was about one half as effective as surface applied sulphate of ammonia. The results from applications of ammonia in irrigation water were disappointing and at the best, only 40% as effective as surface applied sulphate of ammonia, and this on medium soil. These effects as measured by plant composition were confirmed by The West Indies Sugar Company's results on cane yield.

The uptake of nitrogen by the cane plant has been checked during the year in the new experiments, and advantage taken of these experiments to evaluate the use of stalk composition as an aid to nitrogen control.

The application of aqueous ammonia in irrigation water

Nine experiments were carried out at Caymanas on light and heavy soils to compare aqueous ammonia applied in this way against sulphate of ammonia applied at the soil surface. The main object of the work has been to determine the uniformity of applications capable by irrigations.

The loss of ammonia from ammonia injected water during its course down irrigation banks and furrows has been shown to be very great and such as to render distribution by this means most uneven.

(5) Trace Elements

Two trials were laid out at Rose Hall to examine chelated iron as a means of combating iron deficiency in sugar cane grown on alkaline, highly calcareous soils. The material was effective in eliminating the visual symptoms of acute iron deficiency. The effect upon yield remains to be measured, but from field observations, it is not expected to be great.

(6) Stalk analysis as a means of controlling sugar cane nutrition

So far, nutrition control has been based upon leaf composition. Hawaiian work suggests that under their conditions of growth, the composition of the 8th to 10th internodes counting downwards from the apex, is much more sensitive to correlation with plant response to differential fertilizer treatment. The dispersed block fertilizer experiments and the aqueous ammonia experiments have been used as a source of material for these studies, the leaves being sampled at four and five months, and the stalks sampled at five and seven months. The stalks have been analysed by each two-node section. Although the work is still in progress, the results obtained during the year cast considerable doubt on the value of stalk analysis in annual cane, compared with leaf analysis. It may well prove that it will pay best to further perfect leaf analysis by correcting leaf nitrogen to a sheath moisture by regression analysis, and of correcting leaf phosphate to a standard leaf nitrogen composition.

(7) Richmond-Llandovery fertilizer programme

With the improvement in irrigation control at Richmond-Llandovery, evidence has been obtained which suggests that production levels might stand to be increased substantially by using heavier applications of nitrogen and potash. To test this theory, 42 fields have been paired on the basis of their previous performance and variety position, and one at random in each pair given a fertilizer dressing at twice the standard rate given the other field in each pair. The colour and general vigour of the cane receiving the increased dressings are noticeable.

(8) General leaf and soil analysis for advisory purposes

Estates have continued to draw upon the Department for these services.

F. VARIETIES

(1) Distribution

The record production per acre figures for the 1955 crop were associated with a further extension of the more recent "B" varieties and with a further limitation in the acreage of B34104 and B3439, although it is accepted that other factors were also responsible for the improvement in yield. The percentage of the total acreage reaped in estates' cane in different varieties is given in Table VII of Appendix I, and is represented diagramatically in Figure 7. For the first time the acreage reaped in B41227 exceeded any other variety, whilst the rate of elimination of B34104 was maintained and the rate of elimination of B3439 increased. The individual field records of estates show numerous examples of the relatively unsatisfactory performance of these two latter varieties. That such fields have survived at all has been due to the impact of considerations of quota restrictions and the wet spring in 1954 which interfered with replanting preparations. Tables dealing with the relative importance of the different varieties are given in Appendix I.

The planting trend in varieties during the year is shown in Table VIII of Appendix I, from which it is evident that B34104 and B3439, though still being replanted, have both been reduced to only 3% and 2% of the plant acreage, i.e. figures of the same level as B37172 and B37161. Bearing in mind their former importance, it can be assumed that the replanting of these two varieties—B34104 and B3439—has virtually ceased, whilst B41227, B4362 and B42231 accounted for 42, 24 and 14% of the plant cane area reaped. If this trend is maintained, it will mean that the variety position will be much better balanced than in 1950 and 1951, when more than 50% of the cane area was in a mosaic susceptible variety. The results of variety experiments also suggest that there is reasonable hope that the industry need not rely on B41227, B4362 and B42231 only, but will be able to choose from others, which though they may not be potentially superior, have shown signs of being equal to those being currently extended. However this view is tentative and may have to be modified in the light of successive ratoon results.

The relative importance of different varieties in the main ecological areas is given in Tables VIII and IX.

(2) Performance

The performance of the newer varieties relative to the others is clearly shown in Table X.

Because of the preference given B4362 in land quality, its overall superiority must be accepted with some reservation. The table does show quite clearly the reason why B37161 and Co331 are not being displaced on the north coast estates of Trelawny and St. James and the favourable performance of B37172 on the eastern estates. The position occupied here by B37172 would have been seriously challenged by B4362 were it not for the susceptibility of this latter variety to Chlorotic Streak—an aspect dealt with under "Diseases."

TABLE VIII

% Acreage under Varieties for Ecological Areas

Ecological areas	B3172	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Mixed and others	Total acreage reaped
Wet West Estates ..	—	2	35	12	3	23	2	16	—	—	—	7	14,587
Dry North Coast	5	10	6	24	—	2	1	7	5	6	9	25	8,012
Irrigated Estates	—	20	14	3	—	24	18	12	—	—	—	9	29,007
Wet East Estates	—	14	1	3	52	2	—	17	—	—	—	11	8,034
Central Estates	2	11	12	1	1	17	7	34	—	—	—	14	3,201

TABLE IX

Variety Plant Acreage % Total Plant Acreage for Ecological Areas

Ecological areas	B3172	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Mixed and others	Total plant acreage
Wet West Estates ..	—	—	—	4	—	67	3	21	—	1	—	4	2,394
Dry North Coast	2	6	—	17	—	9	4	13	2	11	11	25	1,246
Irrigated Estates	—	2	—	—	—	48	23	21	—	—	—	6	6,737
Wet East Estates	—	5	—	4	29	5	—	42	—	—	—	15	1,283
Central Estates	—	—	—	3	—	23	7	62	—	—	—	5	532

TABLE X

Cwts. Sugar per Acre per Month by Varieties and Ecological Areas

Ecological areas	B3172	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Average
Wet West Estates	3·92	5·35	5·50	4·50	5·12	6·23	6·58	7·05	5·00	3·79	5·82	5·78
Dry North Coast	4·75	5·03	4·40	5·40	—	5·35	5·68	5·93	4·87	5·65	5·36	5·01
Irrigated Estates	—	6·86	6·19	6·51	5·94	7·13	6·47	7·50	5·79	6·59	6·33	6·82
Wet East Estates	—	5·80	4·82	5·54	6·30	6·44	—	5·99	—	—	—	6·12
Central Estates	7·82	5·63	4·96	5·75	5·80	7·80	7·39	8·15	—	—	—	7·21
Overall Average	5·05	6·45	5·41	5·82	6·20	6·76	6·49	7·12	5·03	5·52	5·40	6·26

(3) Experiments and their results

The number and distribution of variety experiments in operation during 1955 are given in Table XI.

(*a*) *The order of merit* in which the varieties appeared in experiments is given in Table XII.

The experiments confirm the general behaviour of varieties as returned by the Cane Yield Survey except in the case of B37161 on the north coast estates (Gray's Inn excluded), where the favourable behaviour of B41227 and B4362 appear to warrant the greater replacement of B37161 by these varieties. The reticence of estates to take this action is partly explained by the favourable seasons over which recent experiments have been carried out and the doubt that therefore exists about the ability of B41227 and B4362 to withstand severe droughts. This caution may well prove unnecessary in view of the much greater stalk population density of the newer varieties and their high rate of growth acceleration following a drought set-back.

(*b*) *The B47' Series* (introduced 1949). The results of large plot experiments have begun to come forward and so far B47258 and B47361 have done well. The promise of B47258 on heavy land has been such that some estates have begun large scale propagation. The other clones of this series which have survived to final field experiments are B47306, B47310 and B47312. B47419 has proved a vigorous cane but of poor juice quality. It has therefore been included in studies of 24-month cane. The survival of the B47' varieties to final experiments has taught an important lesson about the fallibility of early visual selection, even when this may have been carried out by several experienced practical agriculturalists. Therefore, although estates may wish to take an early "chance" on new varieties, it remains imperative that such decisions should not influence the organized, systematic evaluation of varieties according to a scientifically planned scheme.

(4) Lattice experiments

(*a*) *The B49' Series* (introduced 1951). The plant results of the lattice trials containing these varieties (Table XIII) have shown that B49353 and B49377 are promising canes. Unfortunately, the juice quality of the former appears poor. One clone of this series, viz. B49119 was not included in the original consignment from Barbados because its parentage suggested poor resistance to mosaic. However, its performance in Barbados, particularly as a ratoon has been so outstanding that it was recently introduced for testing in Jamaica. It has grown vigorously in the propagation plots and has not developed mosaic symptoms.

TABLE XI

No. and Distribution of Variety Experiments in Operation during 1955

	Fall Plants			Spring Plants		Ratoons			
	Planted 1953	Planted 1954	Planted 1955	Planted 1954	Planted 1955	Reaped 1955			
	Reaped 1955	To be reaped 1956	To be reaped 1957	Reaped 1955	To be reaped 1956	1st	2nd	3rd	Total
Northern Division:									
Barnett	–	–	–	1	1	–	–	–	2
Hampden	–	1	1	–	–	–	–	–	2
Long Pond	1	1	1	–	–	2	–	–	5
Richmond/Llandovery	–	1	–	1	–	1	–	–	3
Rose Hall	–	–	–	2	–	–	–	–	2
Vale Royal	–	1	–	1	1	1	–	–	4
Central Division:									
Appleton	1	1	–	1	–	1	–	–	4
Frome	1	–	–	5	7	1	1	–	15
Holland	–	–	–	–	1	–	–	–	1
Monymusk	2	–	2	2	3	1	3	2	15
New Yarmouth	–	1	–	–	–	3	1	–	5
Sevens	–	–	–	1	1	–	2	1	5
Eastern Division:									
Bernard Lodge	–	1	–	–	1	–	–	–	2
Caymanas	–	2	–	–	2	1	–	–	5
Gray's Inn Central	1	–	2	1	–	–	–	–	4
Innswood	–	–	–	–	–	–	–	1	1
Jamaica Sugar Estates	–	–	1	2	1	–	–	–	4
Serge Island	–	–	–	2	2	–	–	–	4
United Estates	–	–	–	–	–	–	–	–	–
Worthy Park	–	–	–	2	1	2	1	–	6
Totals	6	9	7	21	21	13	8	4	89

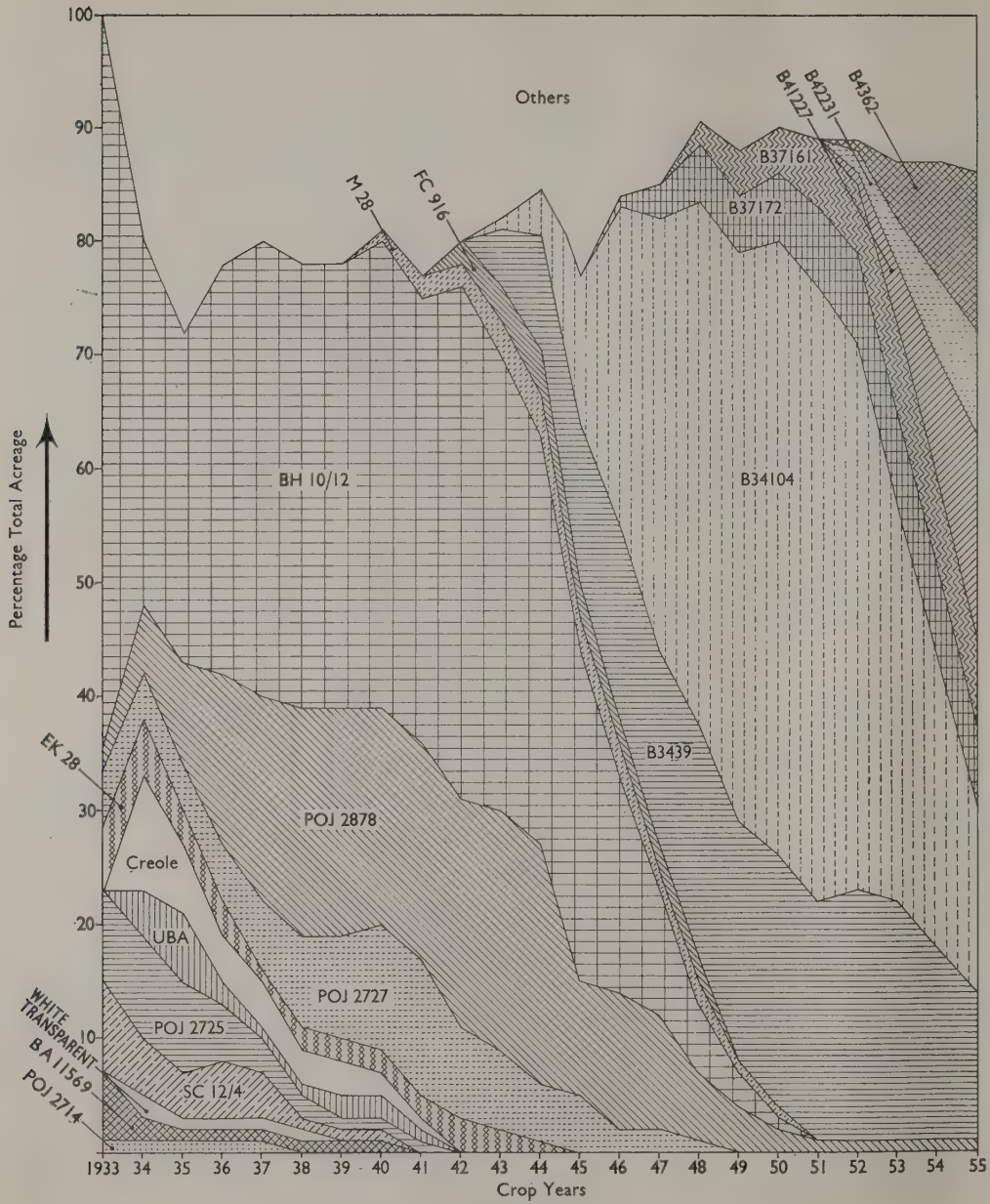

FIGURE 7

% Acreage under Different Varieties

TABLE XII

ORDER OF MERIT (BASED ON SUGAR YIELD) OF PRINCIPAL VARIETIES IN EXPERIMENTS

Variety	Plants				Total No. of experiments in which variety featured	1st Ratoons				Total No. of experiments in which variety featured
	No. of times varieties came—					No. of times varieties came—				
	1st	2nd	3rd	4th		1st	2nd	3rd	4th	
Wet West Estates:										
B37161	–	–	–	1	3	–	–	–	–	1
B37172	–	–	–	1	1	–	–	–	–	1
B41227	3*	5***	1	–	9	2*	–	–	–	2
B42231	–	1	7	–	8	–	1*	1	–	2
B4362	6****	3	–	–	9	1	–	–	1	2
B43214	–	–	–	–	1	–	–	1*	–	1
Dry North Coast Estates:										
B3439	–	–	2	–	4	–	–	–	–	2
B37161	–	1	1	–	6	–	–	–	2	3
B37172	–	1	–	–	1	–	–	–	–	1
B41227	4****	2*	–	–	7	2*	–	2*	–	4
B42231	1*	1*	–	–	3	1*	1*	–	–	3
B4362	1*	–	2	3*	6	1	1*	2*	–	4
Co421	–	1*	1	–	2	–	–	–	1	1
Co331	1	–	2*	–	3	1	1*	–	–	2
Irrigated Estates:										
B3439	–	2	3	–	8	1	–	1	–	7
B34104	–	–	1	1	2	1	–	–	–	1
B37161	1	1	4	–	9	–	–	6***	3*	9
B41227	7****	4	2	2	18	5***	7****	1	1	14
B42231	6***	8*	2*	3	19	4***	5**	3	3	15
B4362	3*	5*	4	6	18	5**	3*	3*	4	15
Wet East Estates:										
B3439	–	1	1	–	2	–	–	–	–	–
B37172	–	2	–	–	2	–	–	–	–	–
B41227	–	1	–	–	1	–	–	–	–	–
B4362	3*	–	–	–	3	–	–	–	–	–
Central Estates:										
B41227	–	2	1	–	3	1	1	–	–	2
B42231	–	–	–	1	1	–	–	–	1	1
B4362	1*	1	–	–	2	–	–	1	–	1
B43214	–	1	–	–	1	1	–	–	–	1

* Significantly better than standard.

TABLE XIII

PLACEMENT OF NEW VARIETIES IN LATTICE TRIALS

Variety	Former code number	No. of experiments	No. of times placed in first five					Total
			Wet West	Dry N. Coast	Irrigated	Wet East	Central	
B47258		2	–	–	1	–	–	1
B47361		1	–	–	1	–	–	1
B49353*		4	2	–	–	1	–	3
B49377		3	–	1	–	–	–	1
B5037		4	–	1	–	1	–	2
B50153		4	1	–	–	–	–	1
B50377		4	–	1	–	–	–	1
B51401	A17	1	–	–	1	–	–	1
B51410	E162	2	–	–	1	–	1	2
B51414	G483	2	–	–	2	–	–	2
B51419	J284	1	–	–	1	–	–	1
B51420*	J285	1	–	–	–	–	1	1
B52401	52	6	–	–	–	–	1 (1st R.)	1
B52402	64	8	–	1	1	1	–	3
B52405	235	8	1	1	–	2	–	4
B52406	370	6	–	–	1	–	–	1
B52407	433	8	2	1	1	2	1	7
B52409	450	5	1	–	1	1	1	4
NCo310*		3	1	–	–	1	–	2

* Varieties which either equalled or exceeded the Standards.

(*b*) *The B'50 Series* (introduced 1952). Of these clones, B5037, B50153 and B50377 have shown most promise in the lattice trials reaped as plants (see Table XIII p. 17).

(*c*) *The B'51 Series* (introduced 1953). All of the canes of this series were put into lattice trials, except B51192 which grew poorly in the Caymanas nursery (Table XIV). The germination of the fall planted experiments was so poor that some will have to be repeated in 1956. B51129 is being propagated at Monymusk and will go into trial in 1956.

TABLE XIV

VARIETIES OF THE B'51 SERIES* PLANTED IN LATTICE TRIALS DURING 1955

B5121	B5126	B5142	B5143	B5179
B51116	B51122	B51131	B51134	B51156
B51259	B51360	B51367	B51374	

* These varieties, which were introduced after selection in Barbados should not be confused with the B51401–B51422 varieties which were selected in Jamaica from the '1st 500' series introduced from Barbados prior to selection in Barbados and which have already been reaped in lattice experiments.

(5) Pre-lattice selections

(*a*) *The B'52 Series* (introduced 1954). Seventeen varieties are being propagated at Monymusk for planting trials in 1956. B5277 is being extended at Caymanas. They should not be confused with the B52401–B52409 varieties derived from the "2nd 500" series which were selected in Jamaica.

(*b*) *The B'53 Series* (introduced 1953 and equivalent to the "5th 500" Series). Of the 404 seedlings originally received from Barbados from their 1st year seedling trials, 52 only were selected for further trial as a result of their performance during the year in nurseries in Jamaica. The varieties selected are set out in Table XV.

The 52 selections have been planted in "five-stool" stage nurseries at Frome, Jamaica Sugar Estates, Monymusk and Vale Royal. Of these, B5352, B53218 and B53348 did so well in the 2nd Year Seedling trials in Barbados that they were recommended by the Breeding Station for special trial in Jamaica, along with the following B53's—which were imported in October 1955:—

B5321	B53200	B53317
B5336	B53267	B53355
B5387	B53313	B53362
B53165		B53365

Of these, B5321, B5336 and B53365 have contracted mosaic as well as B53261 (which was also specially recommended by the Breeding Station). Two varieties, viz. B5387 and B53200, have been reimported. The surviving clones are being multiplied at Monymusk for planting in fall planted lattice experiments.

This is the first occasion upon which the Department has had the results of two strictly parallel selections from amongst the same material proceeding independently in Barbados and in Jamaica. The results are interesting in that of the fifteen varieties reckoned by Barbados workers to be specially worthwhile for

TABLE XV

B'53 SERIES SELECTIONS (BASED ON NURSERY RESULTS)

Variety	Parentage	Nursery from which selected	Variety	Parentage	Nursery from which selected
B5303	B3353 x B4098	Monymusk	B53224	B34102 x B3337	Monymusk
B5319	B3439 x B45151	Monymusk	B53230	B37172 x B4098	Monymusk
B5323	B3439 x B45151	Monymusk	B53238	B4145 x B37193	Monymusk
B5326	B3439 x Co290	Monymusk	B53246	B4362 x B37193	Vale Royal
B5330	B3439 x Co290	Monymusk	B53250	B4362 x B37193	Monymusk
B5352	B35207 x POJ2878	Monymusk	B53252	B4362 x B4098	Frome
B5353	B35207 x POJ2878	Monymusk	B53255	B4362 x B4098	Frome
B5361	B37161 x B34104	Monymusk	B53264	B4362 x B4098	Monymusk
B5377	B37161 x B45151	Vale Royal	B53269	B4362 x POJ2878	Monymusk
B5395	B39157 x B4098	Frome	B53273	B43283 x B41227	Monymusk
B5398	B39157 x B4098	Vale Royal	B53280	Co421 x B41211	Monymusk
B53106	B4092 x B3337	Monymusk	B53285	Co421 x B41211	Vale Royal
B53123	B4145 x B45151	M/musk, Frome, V/Royal	B53293	Co421 x B43375	Vale Royal
B53133	B4362 x B4098	Frome	B53307	B35207 x POJ2878	Frome
B53151	B4362 x B43235	Frome	B53310	B35207 x POJ2878	Monymusk
B53162	B43253 x B4098	Frome	B53320	B39157 x B4098	Monymusk
B53174	B43358 x POJ2878	Monymusk	B53331	B4362 x B4098	Frome
B53175	B43358 x POJ2878	Vale Royal	B53340	B4362 x B4098	Vale Royal
B53184	B45117 x POJ2878	Vale Royal	B53348	B4362 x B4098	Frome
B53192	Co421 x B4098	Monymusk	B53357	B45170 x B41227	Monymusk
B53208	Co421 x B45116	Vale Royal	B53359	Co421 x B41211	Frome
B53210	Co421 x B45116	Monymusk	B53361	Co421 x B41211	Vale Royal
B53212	Co421 x B47419	Vale Royal	B53373	Co421 x B43375	Monymusk
B53215	Co421 x B47419	Monymusk	B53375	Co421 x B47147	Monymusk
B53218	?	Monymusk	B53380	B3439 x Co290	Monymusk
B53220	B3439 x B45151	Frome	B53386	B37172 x B4098	Frome

Jamaica, only four were selected as being amongst the best fifty-two varieties which performed well in nurseries in Jamaica. Greater importance can be attached to such comparisons in future years because of improvements being introduced into our selection procedures.

(*c*) *The B54' Series* (introduced 1954 and equivalent to the "6th 500" Series). The 277 varieties received, have been distributed to "five-stool" nurseries as follows:—220 clones at Frome, 217 at Jamaica Sugar Estates, 206 at Monymusk and 232 at Long Pond. Thirty-nine late germinating clones will be distributed in 1956.

(*d*) *The B55' Series* (introduced 1955 and equivalent to the "7th 500" Series). 371 varieties of this series were received in October 1955, of which two only succumbed to mosaic. The general level of mosaic resistance of this series appears to be high.

identity of the varieties is given in Table XVI and henceforth, the varieties will be known by their "B51" numbers. The best varieties are being distributed to the British West Indies through the Plant Quarantine Station in Trinidad.

(*b*) *The "2nd 500" Series.* Six varieties of this group, viz. 52, 64, 235, 370, 433 and 450 did well in trials reaped during the year (see Table XIII) and of these, 235, 433 and 450 showed signs of most promise. These clones also have been re-numbered, and will be referred to in future by their "B52" numbers as shown in Table XVI.

(*c*) *The "3rd 500" Series.* Selections from this series were included in six lattice experiments along with the B51' series. The selections from the series are set out in Table XVII.

TABLE XVI

THE IDENTITY OF VARIETIES SELECTED FROM THE '1ST AND 2ND 500' SERIES

Temporary Jamaica identification		Permanent 'B' numbers	Parentage	Temporary Jamaica identification	Permament 'B' numbers	Parentage
A17	1st 500 Series	B51401	B4145 x B42231	E178	B51412	B35207 x POJ2878
A26		B51402	B4145 x B42231	F364	B51413	B4362 x B34104
A32		B51403	B4145 x B42231	G483	B51414	B45170 x B41227
B267		B51404	B44341 x B3337	H444	B51415	B35206 x POJ2878
C327		B51405	B3439 x B42231	H459	B51416	B35206 x POJ2878
D95		B51406	B3439 x B38192	I213	B51417	Co421 x B37193
E150		B51407	B35207 x POJ2878	I216	B51418	Co421 x B37193
E155		B51408	B35207 x POJ2878	J284	B51419	B3439 x Co419
E160		B51409	B35207 x POJ2878	J285	B51420	B3439 x Co419
E162		B51410	B35207 x POJ2878	F403	B51421	B4362 x B34104
E168		B51411	B35207 x POJ2878	G491	B51422	B45170 x B41227
52	2nd 500 Series	B52401	B35197 x B42231	370	B52406	B43283 x B41227
64		B52402	B35197 x B42231	433	B52407	B37161 x B41227
70		B52403	B35197 x B42231	443	B52408	Co421 x B41211
77		B52404	B4145 x B41227	450	B52409	Co421 x B41211
235		B52405	Co421 x B41227			

(6) The "500 Series"

These series have been superseded since 1953 by named varieties selected in Barbados after the 1st Year Seedling trial stage, and consequently, the testing of various "500" variety series will be eliminated in due course.

(*a*) *The "1st 500" Series.* A17, E162, G483, J284 and J285 have shown up well in large scale field trials (see Table XIII). Since the clones of this series were originally selected in Barbados from amongst canes which gave rise in Barbados to the B51' series, the prefix "B51" has now been allocated to the survivors of the "1st 500" series in Jamaica. The relative

TABLE XVII

VARIETIES SELECTED FROM THE '3RD 500' SERIES AND PLANTED IN LATTICE TRIALS DURING 1955

1	84	214	357
3	114	287	365
8	146	311	377
21	172	335	437
30	176	343	448
35	206	354	464
66			472

(*d*) *The "4th 500" Series.* This series was reaped as 1st ratoons and the selections as set out in Table XVIII, were propagated at the Caymanas nursery prior to planting in lattice trials during the spring of 1956.

TABLE XVIII

'4TH 500' SELECTIONS (BASED UPON PLANT AND 1ST RATOON NURSERY RESULTS)

Temporary Jamaica identification	Parentage	Temporary Jamaica identification	Parentage
31	B43283 x B41227	272	B45170 x POJ2878
50	B43283 x B41227	299	B44341 x B3337
52	B43283 x B41227	313	B44341 x B3337
61	B45170 x B41227	315	B44341 x B3337
66	B45170 x B41227	338	B4699 x POJ2878
115	B35207 x POJ2878	339	B4699 x POJ2878
164	B38272 x B603	351	B4699 x POJ2878
170	B4362 x B34104	352	B4699 x POJ2878
179	B4362 x B34104	387	Co421 x B46223
182	B4362 x B34104	402	Co421 x B46223
202	Co421 x B41211	405	B4362 x B4098
212	Co421 x B41211	420	B4362 x B4098
222	Co421 x B41211	423	B4362 x B4098
229	Co421 x B41211	426	B4362 x B4098
247	Co421 x B41211	430	B4362 x B4098
268	B37161 x POJ2878	455	B42304 x B45151
270	B37161 x POJ2878	468	B42304 x B45151

(7) Seedlings raised in Jamaica

(*a*) 1952 (*BJ54' Series*) (BJ5401–BJ5470). The quarter-chain plot nerseries at Caymanas, Frome, Jamaica Sugar Estates, Monymusk and Vale Royal were reaped as ratoons. The seventy selections based upon plant and ratoon results, have been propagated. The prefix "BJ" is being used for the first time to denote varieties germinated and selected in Jamaica from fuzz obtained from crosses made in Barbados.

(*b*) 1953 (*BJ55' Series*). It is unlikely that any commercial varieties will emerge from this material. Only nine selections are being carried forward.

(*c*) 1954 (*BJ56' Series*). Forty-eight selections were made in the first stage nursery, forty-four of which

TABLE XIX

FUZZ RECEIVED FROM BARBADOS (BJ57' SERIES) AND FROM HAWAII

Source	Parentage	Number potted	Number discarded*	Number planted	
				Caymanas	Frome
Barbados	B50196 x B47419	32	8	10	14
"	B43283 x POJ2878	70	3	32	35
"	B5011 x B47419	232	3	109	120
"	B49372 x B45151	766	26	364	376
"	B43283 x B41227	747	40	336	371
"	B46103 x B41227	25	0	13	12
"	B47179 x POJ2878	149	27	59	63
"	B5037 x B42231	73	2	36	35
"	Co421 x B47419	2726	422	1072	1232
"	PR1000 x B41227	129	19	50	60
"	B35207 x POJ2878	465	187	145	133
"	B4362 x Co419	112	2	54	56
"	B46288 x B42231	46	11	21	14
"	B4362 x B41127	13	0	6	7
"	B45170 x POJ2878	15	1	7	7
"	B50184 x B46136	24	1	9	14
"	B44111 x B41227	263	92	73	98
	Sub-Total:—	5887	844	2396	2647
Hawaii	H41/3340 x ?	4482	382	1620	2480
"	H32/6705 x ?	92	2	48	42
"	B4362 x ?	4	0	4	0
"	H40/1184 x ?	5413	330	2315	2768
	Sub-Total:—	9991	714	3987	5290
	Totals:—	15878	1558*	6383	7937

* Discarded because of mosaic.

are selfs of B47419, two from Co421 x B47419 and one each from Co421 x B39156 and B4502 x POJ2878.

(*d*) 1955 (*BJ57' Series*). Fuzz received from Barbados was from the crosses indicated in Table XIX which also contains details of the numbers of each potted and planted in the 1st stage nurseries. As the germinations were all late in the season, no selection will be made until early in 1956.

(*e*) *Hawaiian Fuzz.* During the year, the industry, through the kindness of the Genetics Department of the Experiment Station of The Hawaiian Sugar Planters' Association, received fuzz from four crosses made in Hawaii using one or more Hawaiian parents in each cross, by the melting pot technique, the idea being to test the reaction of Hawaiian germ plasma to selection under Jamaican conditions. The results should prove of great interest. The crosses received and the seedlings handled are given in Table XIX.

(8) Varieties imported from sources other than Barbados

The twenty-eight varieties listed in Table XX were received through the Plant Quarantine Station in Trinidad, during the year. All varieties were given the anti-Ratoon Stunting hot water treatment prior to multiplication.

Of the foreign varieties reaped in lattice experiments, NCo310 has shown promise. The variety is very vigorous and of good juice, but unfortunately, it arrows freely. The foreign varieties NCo330, PR1000, May336, POJ3016, M134/32, M112/34 and M213/40 are of doubtful value in Jamaica.

The following foreign varieties have been planted in experiments for the first time:—H32/1063, H32/8560, H37/1933 (which is most impressive under irrigated conditions), Ajax, Comus, Eros, Pindar, Trojan and NCo339.

TABLE XX

FOREIGN VARIETIES RECEIVED DURING 1955

Country of origin	Varieties
Australia	Q28, Q47, Q50, Q56, Q57, G176
British Guiana ..	D62/43
Cuba	CC101, CC102, Gloria 49–1
Hawaii	H38/2915, H38/4443, H39/3633, H39/5803, H39/7028, H44/3098
India	Co352, Co432
Mauritius	Ebene 1/37
Puerto Rico	PR902, PR905
U.S.A.	CL41/223, CP34/79, CP34/120, CP36/105, CP36/111, CP44/154, F31/436

(9) Two-Year Cane

Under conditions where seasonal ripening stimulus can be partly countered by irrigation, it may prove of advantage to grow cane for nearer two years before cutting, but to do this may well require a special variety. Three variety experiments of long growth duration (say 24 months) have been laid out in which the better Hawaiian, Mauritius and NCo canes have been compared with B37161, B37172, B41227, B42231, B4362 and B47419.

The Management of Monymusk has very kindly consented to have the effects upon productivity, of the cutting of standard varieties at increasing ages beyond twelve months, examined on a field scale. The work is being carried out by the Research and Field Staff at Monymusk.

(10) Variety Selection Policy

During the year, and in order to test varieties under different ecological conditions as early as possible, a five-stool nursery stage has been introduced into the selection programme, as a result of which the current selection procedure becomes—

(*a*) *The single stool or* 1st *stage nurseries*, which is shared between two sites—one at Frome and the other in an irrigated area. Final selection is made after eight months' growth in the field and is purely visual.

(*b*) *The five-stool or 2nd stage nurseries*, which is shared between Frome, Jamaica Sugar Estates, Monymusk and Vale Royal. All selections from Stage 1 are planted at each estate nursery. The plots are reaped after twelve months growth and elimination, amongst other factors, is based upon hand refractometer brix readings and weight of cane.

(*c*) *The quarter-chain row or 3rd stage nurseries*, also planted at Frome, Jamaica Sugar Estates, Monymusk and Vale Royal. Each variety is replicated three times in plots of one-quarter chain length of cane row. The plots are reaped after twelve months' growth and elimination is based, amongst other factors, upon hand refractometer brix readings and weight of cane.

(*d*) *Lattice type variety experiments.* Eight experiments are planted on different estates for each new series of varieties. These are run for plants and 1st ratoons and selection is based upon yields of cane and juice tests (using small sample mill expression).

(*e*) *Field Experiments.* The selections from the lattice experiments are planted in field experiments, one experiment at least being planned for each estate, though it is not always possible to achieve this. The conclusions are based upon one plant and two ratoon crops and either sample mill or factory mill tests are used.

(11) Fuzz germination and allied investigations

Formerly, extremely heavy losses in young seedlings have been experienced as a result of the combined attacks of "damping off" (*Pythium* sp.) and *Helminthosporium sacchari*. The fuzz received during the year was used to carry out investigations into improved methods of seedling raising. The main factors evaluated were—the use of glass covers for seed boxes; the influence of shade; the use of bottom heat and reflected overhead heat; the tolerance of seedlings of varying size to different fungicides at a range of concentrations; the antiseptic treatment of irrigation water; the

method of watering—overhead sprinkling and sub-irrigation; nutrition; pressure sterilization of seed bed media; and the physical composition of seed bed media. The standard procedure which has emerged is as follows.

Flats are filled with compost, moistened with superphosphate solution, covered with a glass sheet and sterilized at 15 lb. pressure for 2 hours. The flats are allowed to cool and then watered with nutrient solution.* The fuzz is spread evenly on the soil, firmed on to the soil surface by the palm of the hand under a spray of Aretan solution (0·1% weight volume). The fuzz is then lightly covered with sterile soil through a sieve; Aretan solution is again sprayed on the soil surface and the glass cover replaced. The flats are then stood under overhead calico shade on a moistened sand trough in which are laid electric heating cables such that the soil night temperature in the flats remains above 70° F. The germinating seedlings begin to emerge after 2–3 days and between the 4th and 6th day the glass sheets are progressively removed until the boxes are completely exposed by the afternoon of the 6th day. The boxes are then lightly watered with a Phygon solution (0·1% weight volume). Watering with Phygon and nutrient solution are repeated once per week, ordinary rain water being used on other days. After the third leaf stage, the seedlings are removed from under the awning and thereafter growth is very rapid until they are transplanted at between 3–4 weeks old, when many will already have shown signs of tillering. Prior to transplanting, the flats are watered heavily to ensure a good attachment of compost to the roots. The individual plants are put into 3-in. diameter, tarred, condensed milk cans filled to the maximum with a fertile loam soil of stable structure which has been previously electrically sterilized. The cans are sub-irrigated and are stored for three days in half shade. The day after transplanting, the seedlings are given nutrient solution. The leaves are only clipped when appreciable root pruning has taken place during the transplanting. On the last day in the shade, the plants are inoculated for mosaic by rubbing the spindle leaf with cane juice (from an infected plant) containing suspended, fine carborundum powder. Every effort is made to bring the plants to a high state of nitrogen nutrition by the time inoculation takes place. The mosaic free seedlings are transplanted into field nurseries after another 6–8 weeks in the greenhouse.

G. DISEASES

(1) Eye Spot (*Helminthosporium sacchari*)

The intensity of the attack suffered by Co421 is such that it seems advisable to eliminate this variety from the Trelawny area. Arrangements have been made to establish a Stage 2 and a Stage 3 nursery in this area in order to test seedlings for resistance at an early stage in selection. The Barbados collection of parent varieties has also been requested for testing in the area.

(2) Mosaic (virus)

Although much mosaic still remains in the industry because of B37161 and the scattered remains of B34104 the spread of the newer resistant varieties is gradually getting the disease under control. All the promising new Barbados varieties being selected show resistance to mosaic so that it seems reasonable to hope that the disease can be completely eliminated by breeding and selection methods. For this reason, it is necessary to be particularly careful before a susceptible variety is extended, e.g. H33/1933. Should the performance of such a variety warrant its commercial extension, this should be carried out inside a "*cordon sanitaire*" of resistant varieties. Let us cope, if possible with one virus at a time, and in this respect, the elimination of Chlorotic Streak which is a pressing need, remains to be solved.

(3) Chlorotic Streak (virus)

Chlorotic Streak was first reported in Jamaica as recently as 1949 by Bourne on a few isolated stools of B3439 at Jamaica Sugar Estates. To-day, it is widespread in B37172 on the same estate and is very evident in B4362, especially on their wetter, lower lands. The disease also occurs in B37172 at Serge Island and Gray's Inn as well as on B4362 on most sugar estates.

From the results obtained in Stage 2 and Stage 3 variety selection nurseries at Jamaica Sugar Estates it is evident that nearly all the recent Barbados seedlings are susceptible to the disease and that the resistance factor in Barbados crosses received in Jamaica, is low. Arrangements have therefore been made to test all the Barbados breeding stocks for resistance. It appears that the success obtained in breeding for mosaic resistance has been accompanied by inadvertent susceptibility to Clorotic Streak.

The effects of Chlorotic Streak on the apparently, very susceptible B4362, have been determined by co-operation with the research officers at Worthy Park and Jamaica Sugar Estates, under conditions of high rainfall at Jamaica Sugar Estates and high elevation at Worthy Park. It has been established with high significance that—

(*a*) The disease can delay germination very markedly, but heat treatment (20 minutes in water at 52° C.) does not affect the rate of germination of diseased setts, whereas it can improve the speed of germination of healthy setts.

(*b*) Heat treatment was highly effective in controlling leaf symptoms, even as judged by the incidence in ratoons, but under the wet conditions of Jamaica Sugar Estates secondary infection or spread was so severe that the beneficial effects of heat treatment were short lived, clean stools as young plant cane showing a 50% infection in the 1st ratoon stubble.

* (0.1% Nitrate of Soda, 0·08% superphosphate and 0·02% muriate of potash).

(*c*) The disease had no effect upon juice quality.

(*d*) Yield under wet conditions can be most seriously affected. Even under Worthy Park conditions, where stools were only streaked to the extent of 19% in 1st ratoon stubble, yield losses in plant cane alone were such that healthy cane outyielded "streaked" cane plants by 26%, whilst under the wet conditions of Jamaica Sugar Estates, the figure was 56% yield increase from "healthy" cane stools streaked to the extent of 1% in young plant growth (and 50% in 1st ratoon stubble) over diseased cane streaked to the extent of 33% in young plant cane growth (and 99% in 1st ratoon stubble).

B4362 is both very susceptible and seriously affected by Chlorotic Streak and under wet conditions it is unlikely that economic control of the disease in such varieties, even if heat treatment is resorted to, can be achieved so long as heat treated setts are planted in fields abutting on disease infected fields. Heat treatment may be of value in cleaning up a more resistant variety. The results of the work strongly suggest that the only satisfactory solution to Chlorotic Streak will be the growing of resistant canes. Furthermore, the greatest attention should be paid to keeping an eye on the level of infection in B4362 on all estates, and if the variety shows signs in any areas of building up symptoms, particularly with successive ratooning, it should be replanted even if the area may still be performing at a high level. Care should also be exercised to see that planting material is drawn from healthy, dry fields, i.e. fields which have consistently shown no signs of infection; and susceptible varieties should not be planted in low-lying, wet fields. Hot water treatment only seems worth while when the incidence of the disease is low.

(4) Ratoon Stunting Disease (virus)

The results of work carried out at Long Pond on Co421 definitely established the presence of ratoon stunting disease in Jamaica. It was conclusively shown that—

(*a*) The frequency of symptoms in cane split at harvest, is reduced by the hot water treatment (50° C. for two hours) of sett material.

(*b*) Heat treatment, when applied either to "healthy" or "diseased" sett material, can completely eliminate the disease as measured by the incidence of internal symptoms in mature cane.

(*c*) The disease reduces yield, even in plant cane and this reduction is directly proportional to the per cent. of cane showing the internal symptoms at harvest. In the experiment the mean drop in yield from the disease was 12%, a figure of the same order as is suffered by Pindar and POJ2878 in Queensland and is considered as being high.

(*d*) The disease was successfully transmitted artificially by dipping the freshly cut ends of cane setts in juice expressed from diseased stalks.

(*e*) At six months of age it is possible for diseased cane to be visibly smaller in size than healthy cane and yet, to exhibit no internal symptoms—an observation in agreement with Queensland work.

Disease survey of the effects of Chlorotic Streak and Ratoon Stunting

Although the incidence of ratoon stunting bears a close relationship to the intensity of internal symptoms in mature cane, it bears no relationship to the presence of such symptoms in immature cane. Consequently, any survey of the presence of the disease carried out other than at harvest should rely upon the reaction of the cane to heat treatment as reflected in its subsequent growth. A survey was begun in the autumn on the basis of sampling one field in ten along the lines carried out with the borer survey of 1954. After considerable effort had been devoted to it, the project had to be abandoned because of the depression of germination of the setts given the anti-Chlorotic Streak treatment of 52° C. for 20 minutes, and the heavy mortality of the setts given the anti-Ratoon Stunting treatment of 50° C. for two hours. Attempts were made to improve matters by—

(*a*) Using setts with the most mature buds only.

(*b*) Adding organo-mercurials to the water.

(*c*) Placing setts in cold water immediately on completion of treatment.

(*d*) Starting the treatment period on immersion of the "setts" and not after the water returned to 50° C. following sett immersion.

Benefit was only seen in the case of the older material tested from fall plants. Some of the work will be repeated with mature cane at harvest. The sampling carried out during the autumn did afford a means of arriving at a quantitative appraisal of the intensities of the main diseases on some estates, and these results are given in Table XXI.

(5) Seedling Blight of Sugar Cane* (*Helminthosporium sacchari*)

Working in association with the Botany Department of the University College of the West Indies, it was shown that *Helminthosporium sacchari*, the causative agent in Eye Spot, is also the cause of an undescribed seed-borne disease of sugar cane seedlings. The life cycle of *Helminthosporium sacchari* on sugar cane therefore involves both primary and secondary phases. The attack on young seedlings (primary phase) has been named "Seedling Blight". The incidence of Seedling Blight has been shown to be very sensitive to growing conditions. The two most important factors pre-disposing seedlings to attack seem to be the relative humidity of the atmosphere and the occurrence of a check on the continuous growth of the seedlings. The success of recent seedling raising is attributed to the control of the latter factor in particular.

* A. R. Loveless and C. E. M. Smith, "Seedling Blight of Sugar Cane caused by *Helminthosporium sacchari* Butler, to appear in the Annals of Applied Biology.

TABLE XXI

THE MAIN DISEASES AND THEIR INTENSITIES ON SOME JAMAICA SUGAR ESTATES AS REVEALED BY A PARTIAL SURVEY

Estates	Diseases	Varieties
Appleton	Chlorotic Streak	B34104 (1%), B4362 (5%)
	Eye Spot	B41227*
	Ring Spot	B34104†, B41227*
	Mosaic	B34104 (100%)
	Ratoon Stunting	Possibly on B34104
Bernard Lodge	Ring Spot	B42231*
	Ratoon Stunting	Possibly on B42231
Frome	Chlorotic Streak	B4362 (2%)
	Eye Spot	B41227*, B42231*, B4362*
	Ring Spot	B41227*, B42231*
	Leaf Fleck	B41227*, B42231
Hampden	Chlorotic Streak	B3172 (14%)
	Ring Spot	B37161*, Co421*
	Brown Stripe	B3172*, B37161†, Co421†
	Mosaic	B37161 (38%)
	Mottle Stripe	B3172 (trace), B37161 (trace)
	Ratoon Stunting	Co421 (33%)
	Pokkah Boeng	B37161 (trace)
Monymusk	Chlorotic Streak	B42231 (2%)
	Ring Spot	B42231*
Sevens	Chlorotic Streak	B3439 (1%), B4362 (1%)
	Ring Spot	B3439*, B4362*
	Pokkah Boeng	B3439, B4362*
	Mottle Stripe	B4362*
Worthy Park	Chlorotic Streak	B4362 (1%)
	Eye Spot	B41227*, B42231*, B4362 (trace)
	Ring Spot	B42231*, B4362†, B41227 (trace)
	Pokkah Boeng	B41227*, B42231
	Leaf Fleck	B41227*
	Ratoon Stunting	Possibly on B42231

DEGREE OF INFECTION

% = % stalks showing symptoms
* = spotting restricted to lower leaves
† = spotting on lower, middle and upper leaves; some 'firing' of leaves.

(6) The fungicidal treatment of setts

The results of experiments carried out at Hampden, Sevens, Caymanas, Innswood, Monymusk and Serge Island have established that no practical benefit is to be derived from treating cane planting material with fungicidal solutions except under unfavourable seed bed conditions such as are obtained during wet autumn weather, particularly on heavy clay soils. Four experiments were supplied after germination and carried on to harvest. The results from these have indicated that no difference in yield which could be ascribed to the stimulating effects of the fungicidal treatment, could be measured.

H. PESTS

(1) Small Moth Borer (*Diatraea saccharalis*)

The detailed survey carried out in 1954 gave a very reassuring picture of borer infestation in both the old and the newer varieties. Since it was not possible to be certain that the low figures obtained were partly seasonal, the survey was repeated on a less intensive scale during the 1955 harvest at Caymanas, Frome, Monymusk and Worthy Park—the estates that gave some of the highest infestation figures in the 1954 survey. The mean figures obtained were as set out in Table XXII.

TABLE XXII

% JOINT INFESTATION ON ESTATES

Estate	1954	1955
Caymanas	6·0	9·8 (20)*
Frome	4·3	2·7 (120)
Monymusk	4·1	2·2 (60)
Worthy Park	4·7	6·5 (25)
Mean	4·8	5·3

* Number of fields sampled in 1955.

From the figures obtained in 1955 it is doubtful whether borer intensity was any different from 1954, although the position at Caymanas seems worthy of closer study.

I. WEEDS

A weed survey of the Trelawny, St. James and St. Ann estates as well as of parts of Frome was carried out as a preliminary step to laying out of weed control experiments. The results indicate that in these areas, although there is a fluctuation in importance of the lesser weeds from estate to estate, the dominant weed species are remarkably uniform. The average importance of the different species is set out below, from which it is evident that chemical weed control needs to deal, at present, only with Nut Grass, Cleome and true grasses, which between them account for 86% of the weed population. The remaining 14% is composed of at least thirty-two other weeds, twenty-six of which are listed in Table XXIII.

emergence control of broadleafed weeds, "Spontox" (a mixture of the Butyl esters of 2-4,D and 2-4-5T) was best, with Phenyl-dimethyl-urea (P.D.U.) and the Butoxyethanol ester of 2-4,D, next. The pre-emergence effect of M.C.P.A. relative to other chemicals was better on grasses than on broadleafed weeds. For post-emergence application, the esters of 2-4,D were outstanding, being best in the order of their decreasing volatility. For general purpose weed control, i.e. both pre-emergence and post-emergence, the Butoxethanol, butyl and ethyl esters of 2-4,D were best, in that order. Chloro-I.P.C. was of value in controlling grasses.

The experience gained has shown up the difficulties of carrying out accurate evaluation of weed control

TABLE XXIII

Incidence of Main Weeds taken on an Average of Five N.W. Estates

Specific name	% Incidence
Cyperus rotondus (1)*	55
Cleome ciliata (2)	23
All true grasses (but principally *Cynodon dactylon*) (3)	8
Spigela anthelmia (4), *P. niruri* (5), *Euphorbia hypercifolia* (6)	1·0–3·0% each
Euphorbia hirta (7), *Ipomoea tiliacea* (8), *C. serrata* (9), *Momordica charantia* (10), *Senecioides cinerea* (11), *Hyptis pectinata* (12)	0·5–1·0% each
Eleutheranthera ruderalis (13), *Mimosa pudica* (14), *Commelina sp.* (15), *Lantana camara* (16), *Synedrella nodiflora* (17), *Torellina ferax* (18), *Portulaca oleracea* (19), *Amaranthus dubius* (20), *Phyllanthus carolinensis* (21), *Bidens pilosa* (22)	0·1–0·5% each
Inoxalis martiana (23), *Piriquita cystoides* (24), *Sida acuta* (25), *Emelista tora* (26), *Mucuma pruriens* (27), *Physalis angulata* (28), *Xanthoxalis corniculata* (29)	<0·1 each

*Key to Common Names:—

(1) = Nut Grass, Coco Grass.
(2) = Whitehead, Turtle weed, Rice grass, Consumption weed
(3) = Bahama grass
(4) = Wormweed
(5) = Bastard Tamarind
(6) = Milkweed
(7) = Milkweed
(8) = Hogmeat
(9) = ?
(10) = Cerasse
(11) = ?
(12) = ?
(13) = Marigold
(14) = Shamer, Shame Lady, Sensitive Plant
(15) = Water Grass
(16) = ?
(17) = ?
(18) = ?
(19) = Purslain
(20) = Calalu
(21) = Bastard Tamarind
(22) = Spanish Needle
(23) = ?
(24) = ?
(25) = Broomweed
(26) = ?
(27) = Cow Itch
(28) = ?
(29) = ?

Taking the results, estate by estate, the same general frequencies hold true with modifications, e.g. grasses are relatively more dominant at Barnett, whereas *Cleome ciliata* is fairly rare. At Long Pond, Richmond-Llandovery and Frome, Nut Grass holds sway to the extent of 64–78%, with *Cleome ciliata* being particularly evident at the last two estates, whilst at Vale Royal, *Cleome ciliata* dominates the weed flora almost to the exclusion of Nut Grass.

In the area over which the survey was carried out, the main chemical weedicides on the market have been compared at three levels each, in pre-emergence and post-emergence applications. Fourteen compounds were tested in nine experiments. For the pre-sprays by using field experiments because of the great variation in the density of weed flora within small areas of the same field. It is proposed to examine the technique critically by uniformity studies using different methods and transformations for assessing weedicides. A more accurate weed control evaluation of chemicals is probably possible by planting pure stands of the three main weed species in flats and subjecting these to spray treatment.

J. CULTURAL AND OTHER PRACTICES

The number and distribution of cultivation and other experiments of this nature in operation during 1955, are given in Table XXIV.

TABLE XXIV

	Fall Plants			Spring Plants		Ratoons			
	Planted 1953	Planted 1954	Planted 1955	Planted 1954	Planted 1955	Reaped 1955			
	Reaped 1955	To be reaped 1956	To be reaped 1957	Reaped 1955	To be reaped 1956	1st	2nd	3rd	Total
Northern Division:									
Barnett	–	–	–	–	–	–	–	–	–
Hampden	1	–	1	–	–	–	–	–	2
Long Pond	–	–	–	–	–	–	–	–	–
Richmond/Llandovery	–	–	–	1	–	–	–	–	1
Rose Hall	–	–	–	–	–	–	–	–	–
Vale Royal	–	–	–	1	1	–	–	–	2
Central Division:									
Appleton	–	–	–	1	1	–	1	–	3
Frome	–	–	–	2	2	–	–	–	4
Holland	–	–	–	–	–	–	–	–	–
Monymusk	–	–	1	–	1	–	–	–	2
New Yarmouth	–	–	–	–	–	–	–	–	–
Sevens	1	–	–	–	–	–	–	–	1
Eastern Division:									
Bernard Lodge	–	–	–	–	1	–	–	–	1
Caymanas	2	1	–	1	–	1	–	–	5
Gray's Inn Central	–	–	–	–	–	–	–	–	–
Innswood	–	–	–	1	1	–	–	–	2
Jamaica Sugar Estates	–	–	–	1	2	–	–	–	3
Serge Island	–	–	–	1	1	–	–	–	2
United Estates	–	–	–	1	1	–	–	–	2
Worthy Park	–	2	–	2	1	–	–	–	5
Totals	4	3	2	12	12	1	1	–	35

The investigations covered by the above experiments have been classified as follows:—

(1) The management of heavy clay soils

The knowledge which has been gained on evapotranspiration in connection with irrigation studies has been utilized to elucidate the management of heavy clay soils. It is amply clear from these studies that no case can be made out for fall cultivation of heavy clay soils on many estates, and particularly at Frome, Appleton, Holland and Jamaica Sugar Estates because rainfalls are equal to or so much greater than evapotranspiration that the soils cannot possibly reach an adequate state of dryness.

At present, tonnages on these soils particularly from ratoon cane, are being adversely influenced by inadequate root range brought about by the structured layer of the soil being very shallow and overlying structureless clays, through which water moves with difficulty. The subsoil clays are often highly acid and of low plant nutrient status. An understanding of the management of these soils is being currently sought by a series of experiments dealing with different degrees of subsoil cultivation, the subsoil placement of fertilizer, the use of bagasse, the use of lime and the width of beds.

Although the programme is a long term one, the results obtained to date show that bed width can be of great importance, particularly with regard to ratooning. Narrowing bed widths can increase ratoon yields by nearly 40%. These effects were not obtained where the subsoil shows fair natural oxidation. The use of beds narrower than 22 feet greatly increases ditching charges and although these may be met in plants by mechanized ditching, the maintenance of ditches in ratoons, even at 22-feet intervals, will be a cause for concern. Before advantage can be taken of narrower beds, the cleaning of ratoon ditches will have to be cheapened.

The experiments on ripping and cross ripping heavy clay soils will not be reaped until next year. Plant cane results show that knifing clay soils is highly beneficial, but that the application of bagasse followed by very wet weather can be detrimental.

On heavy clay soils suitable for cambered bed cultivation, the results of experiments show that a planting density of less than 9,000 tops per acre results in a loss of not only cane tonnage but juice quality also, and that these effects apply to ratoons as well.

(2) The value of booting or trash stripping

This practice has very largely died out. The plant cane results which were obtained show that no benefits are obtained in yield or juice quality by booting.

(3) The cultivation of alluvial soils under irrigation

It is the practice on one irrigated estate in particular, to inter-row knife all its ratoon cane fields. The results of 1st ratoon experiments suggest that the benefits from this practice on medium textured soils are in doubt as also are the benefits from cattle ploughing the inter-row spaces, and the rowing of trash in the case of B4362.

On very sandy or stony, excessively free draining alluvial soils, plant cane yields show that yields will be unaffected by changing from planting cane in very shallow furrows followed by inter-row cultivation, to planting cane at the bottom of deep furrows to which no subsequent cultivation is carried out.

On heavy clay soils of marine alluvial origin, the problems of irrigation and drainage or structure preservation, are antagonistic. The value of incorporating bagasse into these soils is being studied. Plant cane results suggest that little benefit was reaped from the treatment. The effects of a flocculating agent "Flotal" (which uses soluble iron compounds) upon the stability of these soils in the field is also being investigated. An experiment has been reaped as plant cane, the results from which suggest that it is not necessary to put water down every furrow on such soils when the cane is cultivated on a bank. Alternate furrow irrigation is adequate. It is also possible to grow cane as two rows on a double bank without loss in yield but with considerably increased ease of water management since this enables longer lines of irrigation to be used. A treatment which involves cane rows separated alternately by "normal" and deep furrows shows promise—the irrigation water is led down the normal furrows only, the deeper ones acting as drains.

(4) Cultural practices under overhead irrigation

Experiments are in operation at Richmond to evaluate comparative variety performance under overhead irrigation as well as to determine which form of cultivation and spacing is best. At Caymanas, the interaction between varieties, spacing and overhead *vs.* surface irrigation is being examined.

(5) Row spacing under dry conditions

Experiments at Rose Hall and Vale Royal have demonstrated that irrespective of the varieties tested, yields are increased by closing row width from 5 feet to 4 feet and even to 3 feet at Vale Royal.

(6) Row spacing under irrigated and wet conditions

Unlike dry conditions, experiments at Appleton, Gray's Inn and Monymusk have shown that no significant differences in yield can be expected from planting cane at row widths varying from 3 feet 4 inches to 6 feet, even for different varieties.

(7) The procedure of breaking banks on heavy soils

The normal practice on heavy soils in wet areas is to "break banks" in three operations, the practice being combined with hand weeding. Experiments carried out at Frome confirm that it is probably necessary to "break banks" in more than one operation in the case of B4362, but that for B41227 and B42231, earthing in one operation would be acceptable; but to do this might well mean using chemical weed control until the plant shoots are well advanced.

K. CHEMICAL LABORATORY

The determinations dealt with during the year in the chemical laboratory are set out in Table XXV (see p. 28).

L. ACKNOWLEDGEMENTS

The keen manner in which all estates' personnel helped with the laying out and reaping of experiments is gratefully acknowledged, as is the co-operation which was so freely given by the Research Officers of Bernard Lodge, Frome, Jamaica Sugar Estates, Monymusk and Worthy Park. The assistance rendered by Caymanas in the early stages of variety selection was particularly helpful.

TABLE XXV

Laboratory Analyses Undertaken during 1955

1. Soil Samples:

Estate	pH	% Free $CaCO_3$	Available p.p.m. P_2O_5	Available p.p.m. K_2O	Total	
Appleton	3	—	3	3	9	
Bernard Lodge	—	—	90	90	180	
Frome	16	—	16	16	48	
New Yarmouth	333	333	333	333	1332	
Long Pond	405	405	405	405	1620	
Rose Hall	8	—	8	8	24	
Serge Island	75	—	75	75	225	
United Estates	52	—	8	8	68	
Summary:—	892	738	938	938		3,506

2. Foliar Analysis:

Estate	% Dry matter N	% Dry matter P_2O_5	% Dry matter K_2O	Total	
Barnett	33	33	33	99	
Bernard Lodge	36	36	36	108	
Caymanas	—	—	42	42	
Monymusk	470	54	54	578	
Gray's Inn Central	72	—	—	72	
Richmond/Llandovery	139	23	23	185	
Rose Hall	88	88	88	264	
Sevens—Danks	33	33	33	99	
United Estates	57	57	57	171	
Worthy Park	133	133	133	399	
Summary:—	1061	457	499		2,017

3. Cane Stalk Analysis:

Estate	Pol % Cane	% Dry matter	% Dry matter N	% Dry matter P_2O_5	% Dry matter K_2O	Total	
Appleton	227	371	—	—	—	598	
Barnett	—	107	—	—	—	107	
Bernard Lodge	—	162	162	162	162	648	
Jamacia Sugar Estates	—	65	—	—	—	65	
Long Pond	—	149	—	—	—	149	
Holland	32	—	—	—	—	32	
Monymusk	—	515	160	160	160	995	
Sevens—Parnassus	98	—	—	—	—	98	
New Yarmouth	97	—	—	—	—	97	
Rose Hall	—	312	—	—	—	312	
Worthy Park	—	331	—	—	—	331	
Summary:—	454	2012	322	322	322		3,432

4. Leaf Extracts:

	Potash on flame photometer		
Frome	269		
Jamaica Sugar Estates	126		
			395

5. Sugar:

Bulk loading polarisations	310

6. Aqueous Ammonia/Ammonium Sulphate Experiment:

Ammonium (NH_4) Nitrogen	1440	
Nitrate (NO_3) Nitrogen	720	
		2,160

7. Miscellaneous: 70

Grand Total:— 11,890

APPENDIX I

CANE YIELD SURVEY

TABLE I

Island Cane Crop for Past Ten Years

Crop year	Cane Ground						
	Total tonnage	% increase or decrease on previous crop	Tons purchased	% increase or decrease on previous crop	Tons estates	% increase or decrease on previous crop	Purchased cane % total
1945–46	1,660,234	25·47	536,631	28·01	1,123,603	24·30	32
1946–47	1,629,182	— 1·87	506,082	— 5·69	1,123,100	— 0·04	31
1947–48	1,882,181	15·53	518,604	2·47	1,363,577	21·41	28
1948–49	2,212,220	17·53	637,346	22·90	1,574,874	15·50	29
1949–50	2,474,754	11·87	764,054	19·88	1,710,700	8·62	31
1950–51	2,425,748	— 1·98	765,814	0·23	1,659,934	— 2·97	32
1951–52	2,468,902	1·78	819,371	0·70	1,649,531	— 0·63	33
1952–53	3,133,752	26·93	1,175,056	43·41	1,958,706	18·74	37
1953–54	3,503,788	11·81	1,380,096	17·45	2,123,692	8·42	39
1954–55	3,564,881	1·74	1,383,855	0·27	2,181,026	2·70	39

In the above table the tonnages are for cane actually ground in the factories. They include cane, the juice from which was sent direct to the distilleries for rum manufacture.

TABLE II

Acreage Reaped by Each Estate Crops 1946–1955

Estates	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	Total
Appleton	538·00	574·75	569·75	1337·75	1301·25	1217·25	1538·15	1535·50	2028·50	2243·00	12883·90
Barnett	675·00	815·25	838·75	781·00	790·75	852·25	785·50	817·00	834·25	944·00	8133·75
Bernard Lodge	1956·50	2169·90	3332·16	4214·10	4357·74	4780·00	5060·80	4677·75	4925·15	4126·80	39600·90
Caymanas	2064·50	2181·25	2708·75	2564·75	2596·90	2719·50	2879·25	2834·50	2963·25	2905·25	26417·90
Frome	6441·00	6652·02	6999·34	7268·40	7971·02	8686·58	8975·34	9774·13	10099·65	10177·04	83044·52
Grays Inn	947·00	1354·25	1636·25	1801·75	1933·50	1872·50	1903·25	1956·00	1953·75	2012·75	17371·00
Green Park	479·00	464·00	458·00	452·75	—	—	333·00	500·25	—	—	2687·00
Hampden	1259·50	1454·00	1483·50	1616·00	1566·00	1706·00	1847·00	2112·00	2443·25	2678·25	18165·50
Holland	473·00	457·75	537·75	607·25	740·50	825·50	895·50	1017·75	1107·75	1222·75	7885·50
Innswood	1682·50	1737·00	1837·00	1874·00	1894·48	2065·00	2208·25	1808·75	2168·25	1940·25	19215·48
Ironshore	660·25	625·25	628·25	687·50	744·00	751·50	—	—	—	—	4096·75
Jamaica Sugar Estates	2564·26	2473·67	2533·33	2544·17	2975·80	2884·34	2914·36	2938·42	3136·68	3177·06	28082·09
Long Pond	1024·50	1226·50	1222·50	1617·00	1722·00	1841·75	1824·00	1802·50	1845·75	1836·25	15962·75
Monymusk	4905·60	5016·75	6988·25	8675·75	11355·75	11995·75	12730·25	12962·50	13667·50	14589·50	102887·60
New Yarmouth	—	—	1984·65	2463·70	2885·80	3346·55	3781·55	3584·20	3747·25	3503·75	25297·45
Richmond/Llandovery	950·50	1032·50	1067·25	1229·75	1322·25	1496·75	1429·00	1461·25	1481·50	1505·00	12975·75
Rose Hall	1118·00	1108·50	1101·50	1109·50	1114·00	1151·75	1190·25	1231·00	1291·25	1334·75	11750·50
Serge Island	1073·00	1136·75	1161·75	1124·50	1182·00	1227·50	1210·50	1288·00	1347·25	1338·75	12090·00
Sevens	1095·38	1253·63	1431·54	1482·66	1634·53	1584·33	1850·85	2095·49	2106·56	1941·59	16476·56
United Estates	1258·00	1559·00	1345·25	1410·75	1394·62	1597·43	1925·98	1747·15	1948·45	1924·95	16111·58
Vale Royal	1533·25	1549·75	1614·00	1649·75	1634·50	1766·25	1769·00	1977·25	2125·50	2162·25	17781·50
Worthy Park	1095·55	1222·14	1269·64	1218·36	1222·70	1146·07	1160·55	1195·00	1272·92	1276·43	12079·36
Total	34785·79	37083·86	43996·41	48211·14	52340·09	55514·55	58212·33	59316·39	62494·41	62840·37	514735·34
* Bog	529·00	591·00	—	—							1120·00
Kew	462·50	428·25	435·75	480·00							1806·50
Raheen	No return	No return	811·50	—							811·50
Total	991·50	1019·25	1247·25	480·00							3738·00

* Bog amalgamated with Monymusk, Raheen with Appleton and Kew operating as cane farmers.

TABLE III

TONS CANE PER ACRE BY ESTATES FOR CROPS 1946–1955 ALSO TEN YEAR AVERAGE

Year	Appleton	Barnett	Bernard Lodge	Caymanas	Frome	Gray's Inn Cent.	Green Park	Hampden	Holland	Innswood	Jamaica Sugar Estates	Long Pond
1946	21·10	29·49	35·98	33·94	34·15	40·06	18·31	18·89	17·03	28·62	40·21	16·16
1947	21·50	30·35	28·46	37·50	38·13	38·28	8·70	14·67	30·89	29·72	37·97	13·02
1948	20·50	29·19	38·56	31·06	31·15	34·51	15·78	20·62	26·73	26·14	35·88	16·56
1949	21·97	28·60	32·39	32·26	37·34	36·32	12·99	19·59	29·51	34·06	45·25	16·87
1950	26·51	34·83	39·07	37·88	34·49	29·79	—	21·27	31·48	34·04	33·64	20·66
1951	23·78	30·45	35·56	34·12	30·58	27·59	—	26·10	25·83	32·21	35·90	20·29
1952	15·87	29·37	28·45	31·48	30·34	30·84	16·18	20·31	20·06	28·18	33·75	17·22
1953	26·06	32·68	29·71	35·21	35·29	31·34	15·49	25·48	30·19	34·96	39·87	25·33
1954	34·32	35·39	30·98	41·71	35·80	32·83	—	23·12	30·86	33·45	36·21	21·29
1955	23·57	32·08	35·14	41·28	29·83	29·36	—	27·78	28·51	37·52	36·12	31·73
10 year average	24·45	31·29	33·28	35·73	33·58	32·48	14·49	22·43	27·96	31·92	37·33	20·52

Year	Monymusk	New Yarmouth	Richmond/ Llandovery	Rose Hall	Serge Island	Sevens	United Estates	Vale Royal	Worthy Park	Island average	Total acres
1946	40·88	—	27·04	21·36	31·32	34·43	30·22	17·66	33·91	31·55	34,786
1947	34·51	—	22·33	14·81	31·07	28·37	25·96	18·46	23·60	29·70	37,084
1948	39·66	42·08	25·10	20·04	29·35	28·94	26·12	20·86	28·85	31·06	43,996
1949	40·78	33·56	32·02	21·36	32·16	33·72	25·01	19·21	27·56	32·69	48,211
1950	35·37	34·95	29·52	21·65	28·22	35·89	28·27	21·41	31·91	32·59	52,340
1951	30·93	34·26	23·91	21·22	25·97	33·08	26·05	22·54	22·79	29·90	55,515
1952	30·16	31·30	29·28	20·85	24·21	30·12	23·51	24·98	22·95	28·34	58,212
1953	36·87	34·21	24·81	18·41	31·74	37·18	30·97	27·97	35·52	33·04	59,316
1954	37·10	35·35	36·06	23·42	31·39	35·11	33·52	24·48	37·41	33·95	62,494
1955	40·98	36·70	33·44	23·85	36·53	40·65	31·19	34·47	36·60	34·75	62,840
10 year average	36·39	34·93	28·63	20·80	30·26	34·13	28·22	23·73	30·20	32·06	—

TABLE IV

TONS CANE PER TON 96° SUGAR BY ESTATES FOR 1951–1955

Estates	1951	1952	1953	1954	1955
Appleton	8·22	7·49	7·92	9·26	7·88
Barnett	7·89	8·27	8·76	8·70	8·08
Bernard Lodge	8·54	8·60	8·64	8·37	7·98
Caymanas	8·64	8·77	8·69	8·87	8·31
Frome	8·21	8·62	9·26	9·44	7·89
Gray's Inn Central	9·53	11·38	10·52	10·63	9·68
Hampden	9·09	8·16	8·84	9·28	8·34
Holland	8·20	9·01	8·91	10·09	8·10
Innswood	8·32	8·78	8·90	9·34	8·12
Jamaica Sugar Estates	8·21	9·15	9·75	9·35	8·20
Long Pond	8·84	8·00	9·28	9·55	8·89
Monymusk	8·42	8·51	8·95	8·96	9·17
New Yarmouth	8·53	8·69	8·89	8·88	8·40
Richmond/Landovery	8·40	9·35	8·35	9·06	8·73
Rose Hall	7·70	7·72	8·41	8·22	8·28
Serge Island	7·75	7·83	7·97	8·46	7·59
Sevens	9·10	9·07	8·78	8·69	8·67
United Estates	8·43	7·66	8·11	8·57	7·80
Vale Royal	8·84	8·41	8·96	9·13	8·62
Worthy Park	7·36	7·60	7·45	7·59	7·01
Average	8·42	8·56	8·95	9·03	8·43

Figures quoted are theoretical—based on 100 B.H.E. and 97% Pol Extraction.

TABLE V

TONS 96° SUGAR PER ACRE BY ESTATES FOR 1951–1955

Estates	1951 (theoretical)	1952 (theoretical)	1953 (theoretical)	1954 (theoretical)	1955 (theoretical)
Appleton	2·89	2·12	3·29	3·70	3·00
Barnett	3·86	3·73	3·73	4·07	3·97
Bernard Lodge	4·16	3·31	3·44	3·70	4·40
Caymanas	3·95	3·59	4·05	4·70	4·97
Frome	3·72	3·52	3·81	3·79	3·78
Gray's Inn Central	2·89	2·71	2·98	3·09	3·03
Hampden	2·87	2·49	2·88	2·49	3·33
Holland	3·15	2·67	3·39	3·95	3·52
Innswood	3·87	3·21	3·93	3·58	4·62
Jamaica Sugar Estates	4·37	3·69	4·09	3·88	4·41
Long Pond	2·30	2·17	2·73	2·23	3·57
Monymusk	3·68	3·68	4·12	4·14	4·47
New Yarmouth	4·01	3·60	3·85	3·98	4·37
Richmond/Llandovery	2·85	3·13	2·97	3·98	3·82
Rose Hall	2·75	2·70	2·19	2·85	2·88
Serge Island	3·35	3·09	3·98	3·71	4·81
Sevens	3·64	3·32	4·22	4·04	4·69
United Estates	3·41	3·07	3·82	3·91	3·97
Vale Royal	2·55	2·97	3·12	2·68	4·00
Worthy Park	3·10	3·02	4·77	4·93	5·22
Average	3·57	3·29	3·69	3·76	4·12

TABLE VI

CWTS. THEORETICAL 96° SUGAR PER ACRE PER MONTH BY ESTATES FOR 1951–1955

Estates	1951	1952	1953	1954	1955
Appleton	**(74)** 4·16 (74)	**(69)** 3·73 (70)	**(96)** 5·56 (93)	**(87)** 5·26 (87)	**(83)** 5·18 (90)
Barnett	**(92)** 5·19 (92)	**(100)** 5·45 (102)	**(96)** 5·54 (93)	**(103)** 6·19 (102)	**(97)** 6·05 (105)
Bernard Lodge	**(111)** 6·26 (104)	**(101)** 5·47 (89)	**(99)** 5·72 (93)	**(98)** 5·91 (91)	**(100)** 6·26 (92)
Caymanas	**(109)** 6·16 (100)	**(104)** 5·67 (92)	**(111)** 6·43 (104)	**(116)** 6·98 (107)	**(113)** 7·08 (104)
Frome	**(102)** 5·78 (103)	**(100)** 5·43 (101)	**(102)** 5·90 (99)	**(103)** 6·23 (103)	**(93)** 5·85 (101)
Gray's Inn Central	**(91)** 5·16 (92)	**(83)** 4·52 (84)	**(103)** 5·96 (100)	**(88)** 5·28 (87)	**(78)** 4·87 (80)
Hampden	**(78)** 4·05 (99)	**(66)** 3·59 (84)	**(73)** 4·24 (101)	**(61)** 3·67 (90)	**(76)** 4·77 (91)
Holland	**(86)** 4·84 (86)	**(85)** 4·62 (86)	**(90)** 5·21 (87)	**(104)** 6·30 (104)	**(76)** 4·77 (83)
Innswood	**(110)** 6·19 (101)	**(99)** 5·39 (88)	**(102)** 5·90 (96)	**(94)** 5·67 (87)	**(99)** 6·19 (91)
Jamaica Sugar Estates	**(131)** 7·41 (132)	**(113)** 6·14 (115)	**(116)** 6·73 (113)	**(104)** 6·30 (104)	**(107)** 6·68 (109)
Long Pond	**(64)** 3·63 (89)	**(70)** 3·82 (89)	**(67)** 3·86 (92)	**(67)** 4·02 (99)	**(84)** 5·28 (100)
Monymusk	**(110)** 6·21 (101)	**(116)** 6·33 (103)	**(110)** 6·37 (103)	**(112)** 6·73 (103)	**(113)** 7·08 (104)
New Yarmouth	**(102)** 5·78 (94)	**(107)** 5·84 (95)	**(96)** 5·55 (90)	**(107)** 6·48 (99)	**(103)** 6·43 (94)
Richmond/Llandovery	**(94)** 5·29 (94)	**(90)** 4·87 (91)	**(89)** 5·14 (86)	**(98)** 5·93 (98)	**(96)** 6·03 (99)
Rose Hall	**(83)** 4·68 (115)	**(90)** 4·88 (114)	**(60)** 3·48 (83)	**(78)** 4·75 (116)	**(75)** 4·69 (89)
Serge Island	**(90)** 5·10 (91)	**(88)** 4·81 (90)	**(109)** 6·32 (106)	**(98)** 5·89 (98)	**(96)** 6·03 (99)
Sevens	**(104)** 5·90 (96)	**(113)** 6·13 (100)	**(117)** 6·76 (110)	**(117)** 7·07 (108)	**(114)** 7·14 (105)
United Estates	**(93)** 5·25 (93)	**(113)** 6·15 (115)	**(105)** 6·05 (102)	**(98)** 5·88 (97)	**(103)** 6·42 (89)
Vale Royal	**(75)** 4·24 (104)	**(97)** 5·25 (122)	**(86)** 4·98 (118)	**(72)** 4·34 (106)	**(97)** 6·07 (116)
Worthy Park	**(92)** 5·17 (107)	**(105)** 5·71 (107)	**(137)** 7·92 (133)	**(137)** 8·27 (137)	**(135)** 8·46 (117)
Average	5·65	5·44	5·78	6·03	6·26

Bold figures in brackets = cwt. theoretical sugar per acre per month expressed as a percentage of the island average in the same year.

Light figures in brackets = cwt. theoretical sugar per acre per month expressed as a percentage of the average for the ecological area in the same year.

TABLE VII

TOTAL ACREAGE UNDER VARIETY % TOTAL ACREAGE BY ESTATES FOR 1950–1955

Estates	B34104						B3439						B37172						B37161						POJ2878					
	'50	51	52	53	54	55	'50	51	52	53	53	55	'50	51	52	53	54	55	'50	51	52	53	54	55	'50	51	52	53	54	55
Appleton	57	75	82	84	49	36	1	2	1	—	—	—	—	—	1	4	3	19	—	—	—	—	20	3	6	—	—	1	—	—
Barnett	8	4	1	1	1	—	42	36	35	38	30	25	—	—	—	—	55	1	39	60	61	58	2	56	—	—	—	—	—	—
Bernard Lodge	57	61	64	66	55	37	31	28	22	14	9	7	2	1	1	—	8	—	4	4	5	6	—	7	2	—	—	—	1	1
Caymanas	40	37	32	29	15	7	28	30	36	36	36	34	—	—	—	—	2	—	—	—	—	—	1	3	4	3	3	2	2	1
Frome	92	92	85	61	53	37	—	—	—	—	—	—	—	—	—	—	12	—	5	6	10	13	—	11	—	—	—	—	—	—
Gray's Inn Central	31	24	21	8	4	4	16	12	14	15	14	11	33	46	62	56	—	48	—	—	—	—	51	—	—	—	—	—	—	—
Green Park	NR	—	8	6	—	—	NR	—	44	36	—	—	NR	—	—	—	—	—	NR	—	2	5	—	—	NR	—	22	16	—	—
Hampden	4	1	—	—	—	—	12	6	2	1	1	1	—	—	—	—	31	—	16	31	36	36	—	28	13	10	3	4	2	1
Holland	58	58	53	51	49	42	17	17	16	11	9	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Innswood	74	75	79	69	75	78	8	8	7	6	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates	—	—	—	—	—	—	11	3	1	—	—	—	72	87	95	88	77	71	1	—	—	—	—	—	2	2	—	—	—	—
Long Pond	48	51	46	35	25	15	7	7	6	7	8	6	—	—	—	—	27	—	4	8	18	27	—	29	25	20	17	16	21	18
Monymusk	66	63	50	31	15	4	26	26	28	25	21	14	—	—	—	—	8	—	4	3	3	4	1	3	—	—	—	—	—	—
New Yarmouth	71	70	55	36	16	6	23	22	41	50	51	42	—	—	—	—	8	—	—	—	—	2	—	3	2	—	—	—	—	—
Richmond/Llandovery	9	7	9	6	4	2	52	49	58	62	52	48	—	—	—	—	18	—	26	30	17	16	—	16	—	—	—	—	—	—
Rose Hall	12	16	22	19	16	11	68	67	61	59	55	44	—	—	—	—	18	—	4	3	5	8	—	15	—	—	—	—	—	—
Serge Island	41	37	18	10	4	—	26	18	23	20	20	11	15	30	48	65	1	76	—	—	1	1	65	—	—	—	—	—	—	—
Sevens	35	27	22	12	9	6	50	64	69	72	68	53	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
United Estates	58	61	60	47	32	21	35	30	28	33	24	18	1	1	1	2	1	2	—	—	—	2	2	2	—	—	—	—	—	—
Vale Royal	37	30	10	9	4	1	37	31	12	12	7	6	—	—	—	—	25	—	13	15	22	26	—	21	1	—	—	—	—	—
Worthy Park	67	63	48	30	5	—	9	7	4	4	1	1	—	1	1	1	2	—	2	5	5	6	1	—	—	—	—	—	—	—
Average	54	54	48	35	26	16	22	21	22	21	18	13	6	7	8	8	8	7	4	6	6	8	8	8	2	1	1	1	1	1

TABLE VII—*continued*

Estates	B41227				B42231				B4362				Co421		Co331	Others						
	'52	53	54	55	'52	53	54	55	'52	53	54	55	'54	55	'55	'50	51	52	53	54	55
Appleton	—	—	14	23	—	—	—	—	—	—	1	5	—	—	1	36	23	16	11	11	13
Barnett	2	1	2	5	—	—	—	—	—	—	5	6	—	—	—	11	—	—	2	4	8
Bernard Lodge	—	1	4	8	—	1	7	15	2	6	13	21	—	—	—	4	6	6	6	4	4
Caymanas	—	—	—	—	—	1	8	17	—	5	14	20	—	1	—	28	30	29	27	22	17
Frome	1	11	15	27	—	1	2	3	3	13	17	20	—	—	—	3	2	1	1	1	2
Gray's Inn Central	—	—	—	—	—	—	—	—	—	5	14	25	—	—	—	20	18	3	16	17	17
Green Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24	36	—	—
Hampden	—	—	—	1	—	—	—	—	2	4	9	13	—	1	2	55	52	57	55	57	53
Holland	—	—	—	5	—	—	—	—	—	3	10	15	—	—	—	25	25	30	35	25	33
Innswood	—	5	5	6	—	—	—	—	—	—	—	—	—	—	—	18	17	14	20	18	15
Jamaica Sugar Estates	1	—	—	—	—	—	—	—	—	6	15	20	—	—	—	14	8	3	6	8	9
Long Pond	—	—	—	—	—	—	—	1	—	—	—	—	6	13	2	16	14	13	15	14	15
Monymusk	3	9	21	39	7	14	22	25	—	3	6	9	—	—	—	3	8	9	13	12	6
New Yarmouth	—	1	15	18	—	2	6	13	—	—	3	6	—	—	—	4	8	4	9	6	12
Richmond/Llandovery	—	—	4	8	—	—	—	—	—	—	4	10	—	—	—	13	14	16	16	18	16
Rose Hall	—	—	—	5	—	—	—	—	—	—	1	3	—	—	1	16	14	12	14	14	21
Serge Island	5	2	1	1	—	—	—	—	—	2	3	8	—	—	—	18	15	5	—	6	4
Sevens	—	33	3	7	—	—	—	—	—	3	9	26	—	—	—	15	9	9	10	10	8
United Estates	1	3	10	12	—	1	4	6	—	1	9	25	—	—	—	6	7	10	11	18	14
Vale Royal	—	—	1	3	—	—	1	2	—	1	6	9	21	20	19	12	24	56	52	36	19
Worthy Park	7	11	16	24	1	5	9	9	11	29	44	48	—	—	—	22	14	22	24	21	18
Average	1	5	10	18	2	4	7	9	1	5	10	14	1	1	1	12	11	11	13	13	12

TABLE VIII

Plant Acreage under Variety % Total Plant Acreage by Estates for 1950–1955

Estates	B34104						B3439						B37172						B37161						B3172				
	'50	51	52	53	54	55	'50	51	52	53	54	55	'50	51	52	53	54	55	'50	51	52	53	54	55	'51	52	53	54	55
Appleton	67	88	87	67	3	—	2	—	—	—	—	—	—	—	5	13	41	—	—	—	—	—	7	3	—	—	—	—	—
Barnett	2	2	—	—	—	—	34	29	38	37	16	—	—	—	2	—	7	—	52	69	60	63	37	43	—	—	—	—	—
Bernard Lodge	58	63	63	46	5	—	38	22	7	11	7	—	—	—	1	—	—	—	1	4	12	10	14	—	—	—	—	—	—
Caymanas	37	30	14	6	2	—	27	24	53	36	21	11	—	1	—	—	3	—	—	—	—	—	6	—	—	—	—	—	—
Frome	95	92	69	13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	6	16	16	3	—	—	—	—	—	—
Gray's Inn Central	6	—	5	—	—	—	28	—	7	16	10	—	44	100	88	29	—	13	—	—	—	—	—	—	—	—	—	—	—
Green Park	NR	—	100	—	—	—	NR	—	—	—	—	—	NR	—	—	—	—	—	NR	—	—	13	—	—	—	—	—	—	—
Hampden	—	—	—	—	—	—	6	—	1	—	2	2	—	—	—	—	—	—	44	50	30	33	24	19	22	37	20	—	5
Holland	72	—	11	47	8	4	28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Innswood	61	72	100	41	71	20	10	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates	—	—	—	—	—	—	4	—	—	—	—	—	63	100	99	63	12	31	—	—	—	—	—	—	—	—	—	—	—
Long Pond	66	4	—	1	—	—	11	48	2	16	6	2	—	—	—	—	—	—	13	46	90	46	17	20	—	—	—	—	—
Monymusk	70	63	25	1	—	—	22	21	31	11	2	1	—	—	3	—	—	—	—	10	3	7	—	—	—	—	—	—	—
New Yarmouth	70	86	35	4	1	—	28	13	61	72	24	5	—	—	—	—	—	—	—	—	—	6	4	2	—	—	—	—	—
Richmond/Llandovery	29	—	—	—	—	—	47	34	57	66	32	13	—	—	—	—	—	—	23	34	13	14	25	18	—	—	—	—	—
Rose Hall	22	22	19	7	13	1	35	72	58	64	35	20	—	—	—	—	—	—	4	4	9	15	27	15	—	—	—	—	—
Serge Island	48	11	—	—	4	—	19	20	31	18	20	10	24	64	65	77	65	66	—	1	—	—	1	—	—	—	—	—	—
Sevens	37	—	11	—	—	—	54	100	81	59	8	2	—	—	1	—	—	—	—	—	—	3	—	—	—	—	—	—	—
United Estates	57	74	47	9	—	—	37	20	29	39	3	—	—	2	7	3	4	—	—	—	1	8	—	5	—	—	6	—	—
Vale Royal	18	9	3	—	—	—	32	13	7	4	—	—	—	—	—	—	—	—	28	18	25	32	—	11	—	—	2	—	—
Worthy Park	56	—	—	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	—	29	—	—	—	—	—	—	—	—	—
Average	57	55	34	10	3	—	21	17	24	17	8	2	5	7	8	7	5	3	4	8	9	11	7	3	1	1	1	—	—

TABLE VIII—*continued*

Estates	B41227				B42231				B4362				POJ2878				Co421	Co331	Others					
	'52	53	54	55	'52	53	54	55	'52	53	54	55	'52	53	54	55	'55	'55	'50	51	52	53	54	55
Appleton	—	—	33	56	—	—	—	—	—	—	3	20	—	2	—	—	—	6	31	12	8	18	12	15
Barnett	—	—	4	14	—	—	—	—	—	—	20	7	—	—	—	—	—	—	12	—	—	—	16	36
Bernard Lodge	—	2	15	21	—	5	24	41	12	22	34	38	—	2	2	—	—	—	3	11	5	2	—	—
Caymanas	—	2	—	1	—	5	25	42	—	23	34	26	1	4	—	—	2	1	36	45	32	25	9	17
Frome	3	31	46	76	1	3	8	4	8	36	43	20	—	—	—	—	—	—	1	3	3	1	—	—
Gray's Inn Central	—	—	—	—	—	—	—	—	—	—	75	70	—	—	—	—	—	—	22	—	—	27	14	17
Green Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	NR	—	—	87	—	—
Hampden	—	—	1	2	—	—	—	—	6	10	22	30	—	3	—	2	3	11	50	28	28	34	51	26
Holland	—	—	—	43	—	—	—	—	4	22	65	48	—	—	—	—	—	—	—	—	85	31	26	5
Innswood	—	31	9	52	—	—	—	—	—	3	—	—	—	—	—	—	—	—	15	19	—	25	20	28
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	—	28	63	45	—	—	—	—	—	—	28	—	1	9	24	24
Long Pond	—	—	—	—	—	—	1	7	—	—	—	—	—	16	30	6	43	13	10	2	8	21	24	9
Monymusk	7	25	49	67	14	30	34	18	2	10	12	12	—	—	—	—	—	—	8	6	14	16	3	2
New Yarmouth	—	4	42	17	2	8	12	31	—	—	10	17	—	—	—	—	—	—	2	1	2	6	7	28
Richmond/Llandovery	—	—	14	21	—	—	—	—	—	—	13	34	—	—	—	—	—	—	3	32	30	20	16	14
Rose Hall	—	—	—	21	—	—	—	—	—	2	3	3	—	—	—	—	—	3	39	2	14	13	21	37
Serge Island	4	—	1	2	—	—	—	—	—	5	3	20	—	—	—	—	—	—	9	4	—	—	6	2
Sevens	—	13	—	15	—	—	—	—	—	14	79	80	—	—	—	—	—	—	9	—	7	11	13	3
United Estates	3	12	33	5	—	4	12	11	—	6	33	79	—	—	—	—	—	—	6	4	13	13	15	—
Vale Royal	—	—	3	18	—	—	3	12	—	3	22	12	—	—	—	—	3	21	22	60	65	59	46	23
Worthy Park	30	10	21	55	—	13	13	—	66	55	55	33	—	—	—	—	—	—	44	57	4	22	11	12
Average	3	14	26	42	4	9	15	14	4	17	23	24	—	1	1	—	1	1	13	12	13	13	12	10

TABLE IX

Tons Cane per Acre for Varieties by Estates and Ecological Groups

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Mixed and others	Average
Appleton	—	16·06	27·44	20·94	34·80	—	32·17	17·56	40·29	—	23·13	23·57
Barnett	27·27	—	32·67	23·06	33·15	—	36·18	—	—	—	39·94	32·08
Frome	29·79	26·04	31·24	15·95	31·10	31·62	33·72	29·45	—	32·00	37·52	29·83
Holland	26·90	25·81	—	—	48·42	—	34·77	—	—	—	26·39	28·51
Wet West Estates	27·29	24·44	31·52	20·85	31·96	31·62	33·79	19·48	40·29	32·00	28·06	28·90
Hampden	30·19	—	27·48	—	30·29	36·00	32·35	35·24	34·87	32·08	26·25	27·78
Long Pond	32·34	24·96	33·38	—	—	41·95	—	28·24	42·21	38·16	31·25	31·73
Rose Hall	22·83	21·65	25·25	—	30·82	—	25·06	—	48·36	—	23·56	23·85
Vale Royal	32·11	20·26	35·55	—	43·02	41·30	34·84	—	36·48	31·91	33·78	34·47
Dry North Coast	25·64	23·59	30·76	—	35·68	40·90	32·73	28·80	37·03	34·04	27·81	29·84
Bernard Lodge	31·41	32·37	32·48	—	38·65	40·69	36·89	29·52	—	—	35·42	35·14
Caymanas	37·92	32·19	45·59	—	40·51	49·58	44·52	35·77	51·64	43·30	39·40	41·28
Innswood	39·01	53·51	—	—	42·53	—	—	—	—	—	35·36	37·59
Monymusk	38·23	38·00	35·74	39·06	46·62	33·65	45·70	36·74	—	—	38·91	40·98
New Yarmouth	32·66	35·58	33·01	—	39·61	42·01	45·35	—	—	—	37·67	36·70
Sevens	38·49	38·28	—	—	44·55	—	44·57	—	—	—	40·87	40·65
Irrigated Estates	36·51	35·32	35·12	39·06	45·48	36·75	43·05	33·38	51·64	43·30	38·32	39·41
Gray's Inn Central	28·03	27·71	—	28·06	—	—	34·33	—	—	—	26·69	29·34
Jamaica Sugar Estates	—	—	—	37·24	—	—	30·51	—	—	—	32·21	36·12
Richmond/Llandovery	31·43	32·03	34·48	—	40·75	—	40·15	—	—	—	30·46	33·44
Serge Island	30·46	23·30	35·99	37·59	44·28	—	34·58	—	—	—	37·00	36·53
Wet East Estates	30·63	28·41	34·51	35·39	41·01	—	33·26	—	—	—	29·93	33·72
United Estates	23·14	22·26	41·28	26·23	41·32	38·21	39·22	—	—	—	28·10	31·19
Worthy Park	21·61	—	—	—	37·74	35·09	37·01	—	—	—	35·56	36·60
Central Estates—Medium rainfall	23·09	22·26	41·28	26·23	39·30	36·69	37·98	—	—	—	31·74	33·35
Overall Average	33·75	28·74	32·12	33·96	40·85	36·56	37·72	29·45	37·32	34·39	32·05	34·71

TABLE X

Tons Cane per Ton Theoretical 96° Sugar for Varieties by Estates and Ecological Groups

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421		Average
Appleton	—	77·1	8·29	7·63	8·05	—	7·62	8·14	9·08	—	7·83	7·86
Barnett	8·53	—	7·94	8·66	8·14	—	7·73	—	—	—	8·21	8·08
Frome	8·45	7·98	7·93	7·95	8·05	7·69	7·55	6·96	—	8·29	8·24	8·17
Holland	7·46	8·51	—	—	8·77	—	7·92	—	—	—	7·69	8·10
Wet West Estates	8·29	8·01	7·97	8·02	8·16	7·69	7·61	8·22	9·08	8·29	8·04	7·98
Hampden	7·74	—	8·55	—	8·87	8·66	8·76	10·14	8·98	9·76	8·44	8·66
Long Pond	8·63	8·85	8·53	—	—	9·44	—	8·95	9·20	9·51	9·05	8·90
Rose Hall	8·22	8·26	8·32	—	8·11	—	8·65	—	9·66	—	8·32	8·28
Vale Royal	8·60	6·89	8·22	—	9·64	8·37	8·15	—	9·31	9·06	8·26	8·63
Dry North Coast	8·34	8·54	8·43	—	8·83	8·75	8·33	9·02	9·24	9·24	8·34	8·55
Bernard Lodge	7·91	8·24	8·02	—	7·89	8·00	7·67	8·22	—	—	8·05	7·99
Caymanas	7·96	10·07	7·97	—	9·12	8·57	7·84	9·86	10·44	9·78	8·66	8·31
Innswood	8·33	8·06	—	—	8·57	—	—	—	—	—	8·24	8·12
Monymusk	8·75	9·07	8·78	10·41	9·57	8·81	9·18	9·34	—	—	8·00	9·17
New Yarmouth	8·40	8·20	8·52	—	8·65	8·14	8·49	—	—	—	8·39	8·40
Sevens	8·51	9·15	—	—	9·19	—	8·70	—	—	—	8·83	8·68
Irrigated Estates	8·44	8·37	8·41	10·41	9·39	8·59	8·45	9·17	10·44	9·78	8·60	8·72
Gray's Inn Central	10·93	9·64	—	9·64	—	—	9·28	—	—	—	9·86	9·68
Jamaica Sugar Estates	—	—	—	8·24	—	—	8·08	—	—	—	8·09	8·20
Serge Island	7·27	7·61	9·62	7·68	8·11	—	7·19	—	—	—	7·25	7·60
Richmond/Llandovery	8·55	10·15	8·92	—	9·10	—	9·17	—	—	—	8·55	8·76
Wet East Estates	8·68	9·64	8·93	8·28	9·01	—	8·54	—	—	—	8·65	8·46
United Estates	7·61	7·86	8·57	7·82	8·68	7·93	7·56	—	—	—	7·75	7·48
Worthy Park	6·86	—	—	—	6·94	7·38	6·98	—	—	—	6·99	7·01
Central Estates—Medium rainfall	7·59	7·86	8·57	7·82	7·65	7·66	7·23	—	—	—	7·21	7·46
Overall average	8·43	8·21	8·28	8·26	8·93	8·51	8·06	9·04	9·25	9·26	8·33	8·43

TABLE XI

Tons Theoretical 96° Sugar per Acre for Varieties by Estates and Ecological Groups

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Mixed and others	Average
Appleton	—	2·08	3·31	2·74	4·28	—	4·22	2·16	4·43	—	2·95	3·00
Barnett	3·20	—	4·11	2·66	4·08	—	4·68	—	—	—	4·86	3·97
Frome	3·53	3·40	3·94	2·01	3·86	4·11	4·47	4·23	—	4·00	4·73	3·78
Holland	3·61	3·03	—	—	5·52	—	4·39	—	—	—	3·43	3·52
Wet West Estates	3·29	3·05	3·97	2·72	3·96	4·11	4·46	2·49	4·43	4·00	3·58	3·65
Hampden	3·90	—	3·21	—	3·56	4·33	3·85	3·62	4·04	3·42	3·22	3·33
Long Pond	3·75	2·82	3·92	—	—	4·44	—	3·15	4·59	4·01	3·45	3·57
Rose Hall	2·78	2·62	3·04	—	3·80	—	2·90	—	5·01	—	2·83	2·88
Vale Royal	3·73	2·94	4·32	—	4·46	4·93	4·27	—	3·92	3·52	4·09	4·00
Dry North Coast	3·07	2·76	3·65	—	4·04	4·70	3·93	3·19	4·01	3·68	3·35	3·49
Bernard Lodge	3·97	3·93	4·05	—	4·90	5·09	4·81	3·59	—	—	4·40	4·40
Caymanas	4·76	3·20	5·72	—	4·44	5·78	5·68	3·63	4·95	4·43	4·55	4·97
Innswood	4·68	4·66	—	—	4·96	—	—	—	—	—	4·29	4·62
Monymusk	4·37	4·19	4·07	3·75	4·87	3·82	4·98	3·93	—	—	4·42	4·47
New Yarmouth	3·89	4·38	3·88	—	4·58	5·16	5·34	—	—	—	4·46	4·37
Sevens	4·52	4·18	—	—	4·85	—	5·12	—	—	—	4·63	4·69
Irrigated Estates	4·33	4·22	4·18	3·75	4·84	4·28	5·10	3·64	4·95	4·43	4·45	4·52
Gray's Inn Central	2·56	2·88	—	2·91	—	—	3·70	—	—	—	2·71	3·03
Jamaica Sugar Estates	—	—	—	4·52	—	—	3·78	—	—	—	3·98	4·41
Richmond/Llandovery	3·68	3·16	3·87	—	4·48	—	4·38	—	—	—	3·56	3·82
Serge Island	4·19	3·06	3·74	4·89	5·46	—	4·81	—	—	—	5·10	4·81
Wet East Estates	3·53	2·95	3·86	4·27	4·55	—	3·89	—	—	—	3·45	3·99
United Estates	3·04	2·83	4·82	3·35	4·76	4·82	5·19	—	—	—	3·63	3·97
Worthy Park	3·15	—	—	—	5·43	4·76	5·30	—	—	—	5·09	5·22
Central Estates—Medium rainfall	3·04	2·83	4·82	3·35	4·00	4·79	5·25	—	—	—	4·33	4·47
Overall average	4·00	3·50	3·88	4·11	4·57	4·30	4·68	3·26	4·04	3·71	3·85	4·12

TABLE XII

Cwts. Theoretical 96° Sugar per Acre per Month for Varieties by Estates and Ecological Groups

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Mixed and others	Average
Appleton	—	4·01	4·70	5·18	6·43	—	7·29	4·80	3·79	—	5·13	5·18
Barnett	5·48	—	6·20	4·50	5·96	—	8·50	—	—	—	5·45	6·05
Frome	5·92	5·12	5·99	3·44	5·80	6·37	7·07	5·64	—	5·82	6·69	5·85
Holland	4·88	4·07	—	—	6·70	—	6·07	—	—	—	4·74	4·77
Wet West Estates	5·35	4·86	6·00	5·12	5·92	6·37	7·02	5·00	3·79	5·82	5·20	5·67
Hampden	5·76	—	4·60	—	5·00	5·78	5·50	4·79	4·04	4·71	4·70	4·77
Long Pond	5·80	4·35	5·78	—	—	4·95	—	4·88	5·71	5·35	5·40	5·28
Rose Hall	4·66	4·45	4·84	—	5·64	—	4·65	—	6·45	—	4·48	4·69
Vale Royal	5·84	4·58	6·59	—	5·17	6·15	7·08	—	5·89	5·42	6·27	6·08
Dry North Coast	5·03	4·40	5·40	—	5·35	5·68	5·93	4·87	5·65	5·36	5·02	5·23
Bernard Lodge	6·08	5·83	5·96	—	6·11	6·81	6·71	5·77	—	—	6·63	6·26
Caymanas	7·20	5·15	7·96	—	6·60	7·19	7·80	5·68	6·59	6·33	6·60	7·08
Innswood	6·69	6·24	—	—	6·20	—	—	—	—	—	5·89	6·19
Monymusk	7·43	7·75	7·00	5·94	7·30	6·14	7·90	6·63	—	—	7·17	7·08
New Yarmouth	5·95	6·38	5·51	—	6·48	7·39	7·74	—	—	—	6·48	6·43
Sevens	7·01	6·23	—	—	7·15	—	7·57	—	—	—	7·29	7·14
Irrigated Estates	6·86	6·19	6·51	5·94	7·13	6·47	7·50	5·79	6·59	6·33	6·75	6·81
Gray's Inn Central	4·24	4·66	—	4·79	—	—	5·76	—	—	—	4·22	4·87
Jamaica Sugar Estates	—	—	—	7·09	—	—	5·99	—	—	—	5·25	6·69
Richmond/Llandovery	6·15	5·35	5·54	—	6·38	—	6·36	—	—	—	5·83	6·03
Serge Island	6·26	4·90	5·54	5·90	7·22	—	6·35	—	—	—	7·73	6·03
Wet East Estates	5·80	4·82	5·54	6·30	6·44	—	5·99	—	—	—	5·14	6·01
United Estates	5·62	4·96	5·75	5·80	7·16	6·93	7·52	—	—	—	6·51	6·42
Worthy Park	5·71	—	—	—	8·31	7·79	8·71	—	—	—	8·37	8·46
Central Estates—Medium rainfall	5·63	4·96	5·75	5·80	7·80	7·39	8·15	—	—	—	7·45	7·24
Overall average	6·45	5·41	5·82	6·20	6·76	6·49	7·12	5·03	5·52	5·40	5·80	6·26

TABLE XIII

Comparison of Varieties Showing Actual Yields and Expressed as a Percentage of B34104

	B34104	B3439	B37161	B37172	B41227	B42231	B4362	Co331	Co421
Tons cane per acre per month	2·24 (100) 2·18 (100) 2·27 (100) 2·24 (100) 2·22 (100) 2·84 (100) 2·06 (100)	2·71 (121) 2·99 (137) 2·74 (121) 2·82 (126) 2·73 (123) 2·53 (89) 2·80 (136)	2·51 (112)	2·29 (105)	3·05 (135)	2·76 (123)	2·92 (132)	2·74 (96)	2·51 (122)
Cwts. sugar per acre per month	5·55 (100) 5·53 (100) 5·63 (100) 5·58 (100) 5·48 (100) 6·27 (100) 5·27 (100)	6·47 (117) 6·90 (125) 6·54 (111) 6·71 (120) 6·48 (118) 6·25 (100) 6·93 (131)	6·06 (109)	5·48 (99)	6·74 (120)	6·46 (116)	7·16 (131)	5·89 (94)	5·44 (103)
Tons cane per ton sugar	8·06 (100) 7·88 (100) 8·08 (100) 8·05 (100) 8·09 (100) 9·07 (100) 7·82 (100)	8·37 (96) 8·67 (91) 8·38 (96) 8·39 (96) 8·43 (96) 8·10 (112) 8·07 (97)	8·28 (97)	8·38 (94)	9·04 (89)	8·54 (94)	8·16 (99)	9·32 (97)	9·24 (85)

TABLE XIV

Tons Cane per Acre for Estates by Cane Class

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	46·69	31·85	—	24·40	17·52	15·09	16·36	23·57
Barnett	58·89	41·56	—	30·62	27·93	28·95	25·77	32·08
Bernard Lodge	48·81	41·31	—	36·44	29·37	31·52	33·59	35·14
Caymanas	62·07	42·76	—	39·30	38·15	35·51	36·51	41·28
Frome	53·56	26·48	—	34·76	32·05	28·35	27·09	29·83
Gray's Inn Central	36·15	34·25	—	34·67	28·40	25·81	27·48	29·34
Hampden	43·81	31·44	—	26·62	25·75	25·22	25·32	27·78
Holland	47·14	29·87	26·43	32·73	28·46	20·44	25·95	28·51
Innswood	54·55	39·59	—	41·89	36·31	34·35	36·78	37·52
Jamaica Sugar Estates	44·07	28·95	—	30·05	31·15	34·42	38·86	36·12
Long Pond	40·79	38·96	—	34·33	32·33	32·27	27·39	31·73
Monymusk	51·26	47·90	—	38·14	36·55	37·80	39·32	40·98
New Yarmouth	51·65	45·62	—	35·35	30·69	35·68	34·10	36·70
Rose Hall	—	28·00	—	23·22	20·84	22·92	24·21	23·85
Richmond/Llandovery	43·26	40·20	—	35·98	26·34	31·18	31·36	33·44
Serge Island	51·52	39·41	—	31·90	33·72	33·67	28·50	36·53
Sevens	—	46·71	—	40·07	39·54	37·87	39·13	40·65
United Estates	54·07	36·15	—	36·50	28·10	23·13	21·51	31·19
Vale Royal	41·92	40·28	—	35·80	34·24	33·02	31·06	34·47
Worthy Park	—	34·73	—	41·50	36·98	31·68	30·81	36·60
Average	50·49	39·94	26·43	34·97	32·33	30·73	32·15	34·75

TABLE XV

TONS CANE PER TON THEORETICAL 96° SUGAR FOR ESTATES BY CANE CLASS

Estate	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	8·58	7·67	—	7·78	7·68	7·70	7·92	7·86
Barnett	8·41	8·10	—	7·98	8·07	7·91	8·06	8·08
Bernard Lodge	7·37	8·44	—	7·83	7·98	7·80	8·26	7·99
Caymanas	8·39	8·43	—	7·98	8·12	8·24	8·84	8·31
Frome	8·71	7·91	—	7·60	7·72	7·89	8·11	7·88
Gray's Inn Central	9·68	9·65	—	9·07	9·79	9·68	9·87	9·68
Hampden	9·16	8·18	—	8·41	8·27	8·05	8·13	8·34
Holland	8·42	9·48	7·93	7·78	7·68	8·02	8·17	8·10
Innswood	8·38	8·31	—	8·32	8·11	8·16	8·04	8·12
Jamaica Sugar Estates	8·41	8·61	—	7·97	8·08	8·22	8·22	8·20
Long Pond	9·87	9·10	—	9·07	8·64	8·32	8·76	8·90
Monymusk	8·97	9·90	—	9·05	8·88	8·94	8·74	9·17
New Yarmouth	8·11	9·30	—	8·48	8·48	8·45	8·14	8·40
Rose Hall	—	8·31	—	8·41	8·32	8·21	7·99	8·28
Richmond/Llandovery	8·89	9·53	—	9·26	8·06	8·40	8·32	8·76
Serge Island	7·50	7·38	—	7·88	7·56	7·60	7·36	7·60
Sevens	—	8·76	—	8·83	8·81	8·43	8·63	8·68
United Estates	8·50	7·28	—	7·95	7·79	7·57	7·79	7·86
Vale Royal	10·18	8·67	—	8·50	8·66	8·46	8·55	8·63
Worthy Park	—	6·94	—	6·98	7·00	7·03	7·23	7·01
Average	8·50	9·01	7·93	8·35	8·23	8·23	8·40	8·43

TABLE XVI

TONS THEORETICAL 96° SUGAR PER ACRE FOR ESTATES BY CANE CLASS

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	5·44	4·15	—	3·14	2·28	1·96	2·07	3·00
Barnett	7·00	5·13	—	3·84	3·46	3·66	3·20	3·97
Bernard Lodge	6·63	4·89	—	4·65	3·68	4·04	4·07	4·40
Caymanas	7·40	5·07	—	4·92	4·70	4·31	4·13	4·97
Frome	6·15	3·35	—	4·51	4·15	3·59	3·34	3·78
Gray's Inn Central	3·74	3·55	—	3·82	2·90	2·67	2·79	3·03
Hampden	4·78	3·84	—	3·16	3·11	3·13	3·11	3·33
Holland	5·60	3·15	3·33	4·21	3·71	2·55	3·18	3·52
Innswood	6·51	4·70	—	5·04	4·48	4·21	4·57	4·62
Jamaica Sugar Estates	5·24	3·36	—	3·77	3·86	4·19	4·73	4·41
Long Pond	4·13	4·28	—	3·78	3·74	3·88	3·13	3·57
Monymusk	5·71	4·84	—	4·21	4·12	4·23	4·50	4·47
New Yarmouth	6·37	4·90	—	4·17	3·62	4·22	4·19	4·37
Rose Hall	—	3·37	—	2·76	2·51	2·79	3·03	2·88
Richmond/Llandovery	4·87	4·22	—	3·89	3·27	3·71	3·77	3·82
Serge Island	6·87	5·34	—	4·05	4·46	4·43	3·87	4·81
Sevens	—	5·33	—	4·54	4·49	4·49	4·54	4·69
United Estates	6·36	4·97	—	4·59	3·60	3·06	2·76	3·97
Vale Royal	4·12	4·65	—	4·21	3·95	3·90	3·63	4·00
Worthy Park	—	5·01	—	5·94	5·28	4·51	4·26	5·22
Average	5·94	4·43	3·33	4·19	4·93	3·73	3·83	4·12

TABLE XVII

PERCENTAGE ACREAGE IN EACH CANE CLASS FOR ESTATES AND ECOLOGICAL GROUPS AND AVERAGE LENGTH OF GROWTH IN MONTHS

(Figures in brackets represent percentage total acreage in each cane class for the ecological group)

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old canes	Average length of growth in months
Appleton	8	11	—	38	19	16	8	11·56
Barnett	9	9	—	22	21	15	24	13·12
Frome	2 (15)	15 (21)	— (1)	10 (16)	27 (27)	20 (30)	26 (25)	12·94
Holland	9	1	2	11	11	6	60	14·76
Hampden	9	7	—	22	17	17	28	13·96
Long Pond	8	7	—	19	13	9	43	13·50
Rose Hall	— (13)	23 (9)	—	26 (13)	20 (12)	22 (15)	9 (14)	12·27
Vale Royal	4	7	—	22	30	18	19	13·16
Bernard Lodge	6	12	—	27	20	10	25	14·05
Caymanas	13	8	—	27	18	11	22	14·04
Innswood	3 (52)	3 (57)	—	11 (53)	16 (44)	13 (36)	55 (40)	14·93
Monymusk	5	24	—	25	20	10	16	12·62
New Yarmouth	13	5	—	34	24	11	14	13·59
Sevens	—	21	—	8	20	18	34	13·12
Gray's Inn Central	4	12	—	11	18	14	41	12·44
Jamaica Sugar Estates	5 (15)	6 (9)	—	16 (11)	15 (11)	12 (12)	46 (18)	12·94
Richmond/Llandovery	4	14	—	26	16	14	26	12·67
Serge Island	17	7	—	25	33	14	4	15·96
United Estates	9 (5)	8 (4)	—	26 (6)	19 (6)	19 (6)	18 (3)	12·36
Worthy Park	—	15	—	29	32	15	9	12·35
Average	6	14	·0·003	21	21	14	24	—
Average length of growth in months	19·56	13·61	24·37	12·56	12·58	12·52	12·72	13·15

TABLE XVIII

CWTS. THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR ESTATES BY CANE CLASS

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	5·34	6·94	—	5·71	4·40	3·88	3·91	5·18
Barnett	6·36	6·04	—	6·70	5·76	5·94	5·58	6·05
Bernard Lodge	5·80	6·98	—	6·85	5·57	6·01	6·06	6·26
Caymanas	7·26	7·07	—	7·36	7·42	6·58	6·53	7·08
Frome	6·78	5·17	—	7·27	6·30	5·54	5·34	5·85
Gray's Inn Central	4·58	5·10	—	6·50	4·81	4·49	4·57	4·87
Hampden	5·01	5·23	—	4·89	4·68	4·60	4·62	4·77
Holland	6·86	4·67	2·74	6·34	4·95	3·56	4·36	4·77
Innswood	5·78	6·56	—	6·84	6·29	5·92	6·11	6·19
Jamaica Sugar Estates	4·79	5·78	—	5·96	6·47	6·83	7·44	6·68
Long Pond	4·27	5·83	—	5·89	5·89	5·79	4·89	5·28
Monymusk	6·15	7·16	—	6·88	6·98	7·25	7·81	7·08
New Yarmouth	7·71	7·45	—	6·34	5·51	6·45	6·34	6·43
Richmond/Llandovery	4·41	5·80	—	6·54	5·49	6·31	6·36	6·03
Rose Hall	—	4·82	—	4·74	4·38	4·66	4·97	4·69
Serge Island	6·06	6·98	—	5·46	6·09	6·34	6·03	6·03
Sevens	—	7·60	—	7·25	6·91	6·91	7·06	7·14
United States	5·97	7·84	—	7·79	6·50	5·52	4·95	6·42
Vale Royal	4·28	6·18	—	6·66	6·16	6·15	5·68	6·07
Worthy Park	—	6·61	—	10·02	8·89	7·61	7·29	8·46
Average	6·07	6·51	2·74	6·67	6·25	5·96	6·02	6·26

TABLE XIX

Fertilizers used for Each Cane Class

Class	Nitrogen				Phosphate				Potash			
	Acres fertilized	Tons N used	Mean lbs./acre	Acres fert. % total acres reaped	Acres fertilized	Tons P_2O_5 used	Mean lbs./acre	Acres fert. % total acres reaped	Acres fertilized	Tons K_2O used	Mean lbs./acre	Acres fert. % total acres reaped
Fall plants	3543·07	131·56	83·17	97	614·68	8·72	31·77	17	2252·31	84·16	83·70	62
Spring plants ..	8497·17	304·88	80·37	99	916·44	16·56	40·49	11	3440·94	137·90	89·77	40
Standover spring ..	—	—	—	—	—	—	—	—	—	—	—	—
1st ratoons	13086·26	456·24	78·09	98	1539·05	21·02	30·59	11	6603·43	245·83	83·35	49
2nd ratoons	13071·56	448·81	76·91	99	963·60	11·02	25·61	7	7036·18	288·61	91·88	53
3rd ratoons	8624·30	286·59	74·44	98	886·52	9·73	24·58	10	4987·65	201·24	90·38	57
Old canes	14928·04	531·77	79·79	98	1274·75	11·03	19·38	8	7718·11	281·37	81·66	51
Total ..	61750·40	2159·85	78·35	98	6195·04	78·08	28·23	10	32010·82	1239·11	86·64	51

TABLE XX

Distribution of Fertilizers

Acres Fertilized % Total Acres for Plants and Ratoons by Ecological Groups 1951–1955

Groups	Nitrogen		Phosphate		Potash	
	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons
1951						
Wet West	96	96	36	6	82	88
North Coast	96	92	4	0·2	68	58
Irrigated	94	98	2	0·4	7	10
Wet East	95	95	30	2	32	0·4
Central	89	96	74	5	81	76
1952						
Wet West	98	99	32	7	87	90
North Coast	96	93	2	0·6	74	75
Irrigated	95	99	4	7	6	11
Wet East	80	95	23	0·5	37	10
Central	90	97	49	26	82	70
1953						
Wet West	99	99	43	12	94	95
North Coast	93	94	—	1	74	77
Irrigated	94	98	3	4	8	12
Wet East	92	93	24	2	25	15
Central	99	100	18	33	99	90
1954						
Wet West	98	99	56	10	87	95
North Coast	69	73	2	1	53	58
Irrigated	96	96	3	5	18	16
Wet East	83	99	45	4	28	2
Central	100	100	42	24	99	98
1955						
Wet West	96	98	41	13	94	95
North Coast	100	99	2	8	17	17
Irrigated	100	96	24	8	59	33
Wet East	100	99	1	1	77	72
Central	100	99	2	25	100	80

TABLE XXI

PERCENTAGE ACREAGE FERTILIZED WITH NITROGEN FOR EACH CANE CLASS 1951–1955

Crop year	Plants		Mean	Ratoons				
	Fall	Spring		1st	2nd	3rd	4th	Old
1951	93	96	95	96	98	99	—	96
1952	92	95	94	99	98	97	—	96
1953	97	94	96	97	99	98	—	96
1954	94	90	92	94	93	92	—	97
1955	97	99	98	98	99	98	—	98

TABLE XXII

AVERAGE N, P_2O_5, K_2O APPLICATIONS FOR PLANTS AND RATOONS BY ECOLOGICAL GROUPS 1951–1955

(lbs. per acre)

Groups		1951			1952			1953			1954			1955		
		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Wet West	Plants	73	42	120	71	48	112	65	47	103	56	34	92	56	45	99
	Ratoons	64	34	116	69	21	99	65	22	102	61	22	101	60	31	94
North Coast	Plants	40	18	55	39	21	64	36	—	71	29	12	72	32	11	81
	Ratoons	49	13	61	40	20	64	37	22	64	31	12	58	32	12	83
Irrigated	Plants	83	87	102	89	33	106	96	15	80	99	21	74	101	19	78
	Ratoons	90	49	105	96	38	99	96	15	77	95	16	70	100	19	71
Wet East	Plants	75	33	71	68	37	72	61	39	64	75	34	68	78	21	77
	Ratoons	87	—	67	87	11	55	64	24	70	83	33	61	87	28	81
Central	Plants	60	40	59	64	44	89	67	31	90	57	38	85	72	28	87
	Ratoons	67	23	72	81	37	104	61	32	80	62	34	63	64	27	90

APPENDIX II

EXPERIMENT DATA

PART 1

RESULTS OF FERTILIZER EXPERIMENTS

A summary of the results of the fertilizer experiments reaped in 1955 is presented below. Actual yields, in tons cane per acre, % sucrose or Pol % cane and tons sugar per acre or tons pol per acre obtained by control are quoted, and yields obtained from the various levels of fertilizer are expressed as a percentage of control. The variety used in each experiment is also noted.

N.B.—The term "cut back" used in the case of certain fall plant experiments indicates that although planted in the fall of a particular year the cane was reaped the *following* crop, thus shortening the usual growing period.

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
1. Appleton—Appleton—Stephen Piece 2 (3x3x3 NPK) (B37172)													
	0	2	4	0	2	4	0	1	2				
Fall Plants													
Cane	35·1	110	115	37·0	104	104	36·9	103	105	8·3	9·0	—	—
Sucrose ..	14·0	100	99	14·1	99	98	13·9	100	100	3·1	—	—	—
Sugar	4·9	110	113	5·2	103	103	5·2	103	105	11·8	9·6	—	—
1st Ratoons													
Cane	22·5	133	158	26·8	108	119	27·7	103	115	13·1	17·1	14·3	—
Pol % cane ..	15·4	105	103	15·7	101	101	15·9	100	98	3·7	3·9	—	—
Pol	3·4	140	164	4·2	110	122	4·4	104	114	13·1	17·7	14·5	—
2. Barnett—Fairfield—Bottom Rice (3x3x3 NPK) (B37161)													
	0	3	6	0	4	8	0	1	2				
Spring Plants													
Cane	40·4	101	100	40·6	99	101	39·4	103	106	5·9	—	—	6·1
Sucrose ..	13·8	101	100	13·9	100	99	13·9	99	100	2·4	—	—	—
Sugar	5·6	102	101	5·7	99	100	5·5	101	106	5·9	—	—	6·0
1st Ratoons													
Cane	37·8	113	108	41·6	91	101	40·3	97	104	24·7	—	—	—
Sucrose ..	13·0	101	96	13·1	95	98	12·7	99	103	6·4	—	—	—
Sugar	4·8	115	106	5·3	84	97	5·1	96	107	19·7	—	—	—
2nd Ratoons													
Cane	14·7	102	84	13·4	97	116	13·3	107	110	28·2	—	—	—
Sucrose ..	15·3	100	100	15·4	101	97	15·4	97	101	6·8	—	—	—
Sugar	2·2	103	85	2·1	97	112	2·0	104	111	29·8	—	—	—
3. Caymanas—Cumberland Pen—Section 9 (3x3x3 NPK) (B4362)													
	0	3	6	0	3	6	0	1	2				
Cane	62·3	114	117	67·2	109	97	62·9	113	114	9·0	9·9	9·2	9·8
1st Ratoons													
Cane	25·6	136	151	30·6	118	105	30·1	111	118	29·9	38·7	—	—
4. Caymanas—Dawkins—Section 10 (3x3 NK) (B4362)													
	0	3	6				0	1	2				
Spring Plants													
Cane	44·3	110	105				45·8	105	99	14·8	—	—	—
1st Ratoons													
Cane	45·9	100	100				47·8	94	93	15·4	—	—	—
2nd Ratoons													
Cane	51·6	101	93				51·8	98	95	12·3	—	—	—
5. Caymanas—Farm 11—Section 5B (3x3 NK) (B4362)													
	0	3	6				0	1	2				
Spring Plants													
Cane	42·0	106	100				43·4	96	101	12·7	—	—	—
Sucrose ..	15·4	100	99				15·3	101	100	4·7	—	—	—
Sugar	6·7	103	96				6·6	97	102	12·9	—	—	—
Not reaped as 1st ratoons													
2nd Ratoons													
Cane	46·1	110	115				47·9	108	104	13·0	—	—	—
Sucrose ..	12·8	96	92				12·1	104	100	14·0	—	—	—
Sugar	5·9	106	106				5·8	113	104	17·7	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)				18% superphosphate (P)			Muriate of potash (K)					
6. Frome—Frome—Blue Castle—School House 1 (3x3x3 NPK) (B4362)													
Fall Plants	0	2	4		0	3	6	0	1½	3			
(Cut back)													
Cane	35·8	114	119		37·0	110	113	37·4	110	109	14·9	16·7	—	—
Sucrose ..	12·0	98	95		12·5	96	88	11·8	99	102	9·7	—	10·3	—
Sugar	4·3	113	115		4·6	106	99	4·4	109	111	12·7	13·9	—	—
1st Ratoons													
Cane	24·0	142	167		31·3	106	108	29·3	118	118	11·9	16·3	—	13·4
Sucrose ..	15·0	101	100		15·1	100	100	15·1	99	100	3·4	—	—	—
Sugar	3·6	144	169		4·7	106	109	4·4	118	119	10·1	13·9	—	11·3
2nd Ratoons													
Cane	18·9	141	164		24·4	106	109	21·7	122	132	12·2	16·5	—	14·4
Sucrose ..	16·8	99	97		16·8	101	97	16·7	100	99	4·7	—	—	—
Sugar ..	3·2	140	161		4·1	107	106	3·6	122	130	10·6	14·2	—	12·5
7. Frome—Frome—Fontabelle—Morass 4 (4x2x3 NPK) (B4362)													
	0	2	4	6	0	3		0	1½	3			
Fall Plants													
Cane	55·5	104	111	103	59·2	96		56·3	103	107	13·9	—	—	—
Sucrose ..	12·8	105	104	98	13·5	94		12·8	103	102	4·7	—	5·6	—
Sugar	7·1	110	116	101	8·0	91		7·2	106	109	15·5	—	—	—
1st Ratoons													
Cane	41·2	98	96	91	39·9	99		36·4	108	119	11·6	—	—	14·9
Sucrose ..	11·7	104	99	103	12·0	99		11·6	104	103	9·8	—	—	—
Sugar	4·9	100	94	93	4·8	99		4·3	112	121	18·3	—	—	—
2nd Ratoons													
Cane	30·3	103	107	105	31·2	102		31·0	97	108	11·5	—	—	—
Sucrose ..	14·7	96	91	91	14·1	97		13·6	104	102	6·4	—	—	—
Sugar	4·5	98	97	96	4·4	98		4·2	101	110	15·9	—	—	—
8. Frome—Frome—Frome—Storer (3x3x3 NPK) (B41227)													
	0	1	2		0	3	6	0	1½	3			
Spring Plants													
Cane	30·4	105	101		29·7	112	101	30·1	103	105	10·4	—	—	—
Sucrose ..	12·5	98	98		12·7	94	97	12·4	98	100	5·2	—	—	—
Sugar ..	3·8	102	99		3·8	106	98	3·7	102	105	10·4	—	—	—
9. Frome—Masemure—Albany—Molly (4x3x3 NPK) B4362)													
Fall Plants	0	2	4	6	0	3	6	0	1½	3			
(Cut back)													
Cane	29·4	111	135	150	35·7	99	107	35·6	97	110	13·5	17·1	—	—
Sucrose ..	12·3	98	91	79	11·2	100	100	10·6	111	107	5·3	5·9	—	4·5
Sugar	3·6	109	124	120	4·0	99	107	3·8	106	116	12·8	14·9	—	12·4
1st Ratoons													
Cane	17·9	149	215	244	30·9	101	106	27·6	115	129	12·2	21·7	—	14·0
Sucrose ..	14·5	103	101	96	14·3	104	101	14·3	102	102	2·7	2·7	—	—
Sugar	2·6	152	218	233	4·4	103	108	3·9	117	132	12·4	29·8	—	35·5
2nd Ratoons													
Cane	15·0	173	239	233	28·2	101	96	25·0	115	119	15·2	29·8	—	15·4
Sucrose ..	17·4	99	97	97	17·0	100	99	16·7	103	103	3·4	—	—	—
Sugar	2·6	170	232	226	4·8	101	96	4·2	118	123	16·9	32·3	—	17·5
10. Frome—Masemure—Albany—Albany Piece (3x3x3 NPK) (B41227)													
Fall Plants	0	2	4		0	3	6	0	1½	3			
(Cut back)													
Cane	29·3	103	95		27·4	103	116	29·7	93	101	16·9	—	—	—
Sucrose ..	12·5	102	103		12·8	100	99	12·7	102	102	5·3	—	—	—
Sugar	3·7	105	98		3·5	104	116	3·8	95	103	19·6	—	—	—
1st Ratoons													
Cane	59·8	104	104		59·0	103	109	60·6	99	104	9·9	—	—	—
Sucrose ..	13·6	99	97		13·6	99	97	13·0	106	104	4·2	—	—	4·2
Sugar	8·1	102	101		8·0	102	106	7·9	105	109	7·6	—	—	—
2nd Ratoons													
Cane	33·3	109	113		32·6	107	122	35·7	97	104	16·3	—	—	—
Sucrose ..	15·4	98	102		15·1	104	103	15·2	102	102	3·0	—	—	—
Sugar	5·1	107	115		4·8	112	126	5·4	100	106	14·0	—	15·8	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)						
	0	2	4	0	3	6	0	1½	3		(N)	(P)	(K)
11. Frome—Masemure—Charlottenburgh—Tin (3x3x3 NPK) (B34104)													
Fall Plants (Cut back)													
Cane	30·0	105	134	32·4	107	107	36·4	88	92	12·1	13·8	—	—
Sucrose ..	11·6	96	76	10·6	101	94	10·3	103	102	14·0	15·8	—	—
Sugar	3·5	101	103	3·5	109	100	3·8	91	92	14·8	—	—	—
1st Ratoons													
Cane	19·3	122	153	22·8	110	108	24·0	95	106	17·4	21·8	—	—
Sucrose ..	13·0	103	90	12·7	98	99	11·9	107	111	6·4	6·6	—	6·1
Sugar	2·5	126	140	2·9	108	106	2·8	103	119	18·0	22·0	—	—
2nd Ratoons													
Cane	14·9	117	146	17·3	105	106	15·5	118	131	17·4	21·1	—	20·3
Sucrose ..	14·9	101	92	14·7	99	96	13·9	107	108	6·8	7·0	—	—
Sugar	2·2	118	137	2·6	103	102	2·1	126	141	18·4	21·7	—	22·5
12. Frome—Masemure—Masemure—Sarah Gravey (3x3x3 NPK) (B37161)													
	0	2	4	0	3	6	0	1½	3				
Spring Plants													
Cane	39·4	113	119	43·8	101	98	42·9	98	107	11·7	13·1	—	—
Sucrose ..	14·9	98	99	14·7	101	99	14·7	99	101	13·9	—	—	—
Sugar	5·9	112	118	6·5	102	97	6·3	97	108	12·2	—	—	—
1st Ratoons													
Cane	32·4	130	135	40·8	93	98	40·1	89	107	11·5	14·0	—	11·3
Sucrose ..	13·9	100	95	14·6	92	93	13·7	101	101	4·1	4·2	—	—
Sugar	4·4	133	133	5·7	88	95	5·4	90	108	4·4	5·4	—	4·4
2nd Ratoons													
Cane	23·1	126	143	30·0	91	93	28·4	94	106	11·0	13·6	—	—
Sucrose ..	14·7	97	98	14·1	104	102	14·4	101	100	2·7	—	2·7	—
Sugar	3·4	122	140	4·2	95	96	4·1	95	106	11·8	14·1	—	—
13. Frome—Mint—Mint—Rugland (3x3x3 NPK) (B34104)													
Fall Plants (Cut back)													
Cane	28·2	112	113	26·2	119	131	29·0	105	110	9·0	9·8	10·6	6·1
Sucrose ..	12·2	95	95	12·2	94	96	11·5	103	102	6·1	—	—	—
Sugar	3·4	107	107	3·2	113	126	3·4	109	113	12·0	—	13·5	12·8
1st Ratoons													
Cane	14·2	136	163	14·9	136	145	16·4	122	124	17·5	23·4	22·3	20·3
Sucrose ..	13·5	101	92	13·2	98	100	13·0	100	102	6·2	6·3	—	—
Sugar	1·9	139	151	2·0	131	145	2·1	121	126	16·1	20·9	20·2	18·6
2nd Ratoons													
Cane	14·2	129	135	14·1	134	133	14·9	117	128	13·1	16·0	16·1	15·1
Sucrose ..	15·0	99	96	14·9	99	98	14·8	98	102	3·9	—	—	—
Sugar	2·1	129	130	2·1	132	130	2·2	115	129	14·6	17·5	17·6	16·8
14. Frome—Shrewsbury—Cornwall—Porter (4x2x3 NPK) (B34104)													
	0	2	4	6	0	3	0	1½	3				
Fall Plants													
Cane	33·8	101	103	104	33·9	103	32·8	108	106	10·2	—	—	—
Sucrose ..	9·1	105	104	102	9·3	101	8·9	108	107	12·1	—	—	—
Sugar	3·2	103	104	104	3·2	105	3·0	115	112	14·8	—	—	—
1st Ratoons													
Cane	30·6	121	127	125	35·0	106	30·4	121	135	8·4	13·5	—	11·8
Sucrose ..	9·3	96	92	91	8·8	101	8·1	108	123	18·1	—	—	19·5
Sugar	2·9	118	119	115	3·2	105	2·5	128	164	18·6	—	—	28·7
2nd Ratoons													
Cane	25·0	120	119	121	28·1	104	24·5	125	126	16·3	—	—	22·6
Sucrose ..	12·7	90	90	92	11·6	104	11·4	109	100	9·1	—	—	—
Sugar	3·1	112	110	113	3·3	108	2·8	137	126	19·2	—	—	22·4
15. Frome—Shrewsbury—Friendship—Morass 3 (3x3x3 NPK) (B4362)													
	0	2	4		0	3	6	0	1½	3			
Fall Plants ..													
Cane	42·7	106	111		46·0	96	99	42·2	111	111	8·1	8·6	—	8·8
Sucrose ..	12·5	103	100		12·6	102	97	12·1	106	106	10·1	—	—	—
Sugar	5·4	107	111		5·8	98	96	5·1	117	119	8·0	8·5	—	8·9
1st Ratoons													
Cane	34·8	122	136		41·4	98	102	38·0	112	115	6·1	7·3	—	6·7
Sucrose ..	15·4	96	95		15·0	99	100	14·8	101	102	5·4	—	—	—
Sugar	5·4	116	129		6·2	97	102	5·6	113	118	4·3	5·0	—	4·8

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)						
	0	2	4	0	3	6	0	1½	3		(N)	(P)	(K)
16. Frome—Shrewsbury—Shrewsbury—River Piece 1 (3x3x3 NPK) (B4362)													
Fall Plants													
Cane	32·1	91	95	29·8	105	105	23·3	141	154	8·5	—	—	11·2
Sucrose ..	10·3	100	91	10·1	108	90	7·8	146	155	16·2	—	—	12·6
Sugar	3·6	90	90	3·3	107	94	1·9	197	228	11·7	—	—	20·5
1st Ratoons													
Cane	26·7	102	115	27·3	105	105	21·6	138	154	8·0	8·5	—	10·5
Sucrose ..	13·4	101	99	13·3	101	100	12·7	108	106	4·2	—	—	4·1
Sugar	3·6	103	111	3·7	106	104	2·8	148	163	8·6	9·0	—	11·7
2nd Ratoons													
Cane	27·3	103	106	27·6	102	102	22·9	126	141	7·5	—	—	9·2
Sucrose ..	15·0	100	100	15·1	100	100	14·9	102	102	2·2	—	—	—
Sugar	4·1	103	106	4·2	102	102	3·4	129	144	7·9	—	—	9·8
17. Innswood—Montpelier—Section 8 (3x3x3 NPK) (B34104)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	30·0	117	120	33·1	102	104	31·4	111	111	7·6	8·6	—	8·2
Sucrose ..	13·6	101	100	13·5	94	94	13·6	94	97	7·8	—	—	—
Sugar	3·9	118	120	4·5	96	98	4·1	109	112	9·3	10·6	—	10·0
1st Ratoons													
Cane	31·1	124	118	34·9	100	105	32·0	116	116	8·6	9·8	—	9·5
2nd Ratoons													
Cane	16·7	140	140	20·5	108	102	18·3	121	126	14·2	18·1	—	16·5
3rd Ratoons													
Cane	34·8	88	82	30·2	102	110	28·3	111	122	9·0	8·1	9·4	10·0
Sucrose ..	13·9	98	100	13·8	100	101	13·5	104	102	5·3	—	—	—
Sugar	4·9	86	82	4·2	101	112	3·8	115	125	10·6	9·5	11·1	12·0
18. Jamaica Sugar Estates—Chiswick—Section 5 (4x3x2 NPK) (B4362)													
	0	2	4	6	0	2	4	0	1½				
Plants													
Cane	33·2	107	99	102	27·4	137	134	30·6	121	15·1	—	22·1	16·1
1st Ratoons													
Cane	27·8	128	130	127	30·4	117	116	32·6	107	15·8	26·1	—	—
Sucrose ..	16·9	95	85	91	16·1	97	97	15·6	101	7·0	8·9	—	—
Sugar	4·7	121	109	116	4·9	113	111	5·0	109	14·6	—	—	—
19. Jamaica Sugar Estates—Spanish Wood—Section 16 (3x3x3 NPK) (B37172)													
	0	3	6	0	3	6	0	1	2				
Fall Plants													
Cane	21·7	125	128	20·0	139	142	23·3	117	111	16·4	19·3	20·9	—
1st Ratoons													
Cane	13·2	168	190	16·6	129	136	18·0	119	117	12·2	18·7	14·8	13·6
Sucrose ..	12·3	89	84	11·7	89	106	11·6	100	97	8·2	7·6	8·1	—
Sugar	1·6	149	160	1·9	113	144	2·1	120	111	15·6	21·9	18·7	—
2nd Ratoons													
Cane	17·6	137	162	19·7	131	124	20·9	123	114	19·3	25·7	22·8	—
3rd Ratoons													
Cane	14·5	147	168	15·5	146	139	16·9	123	130	18·3	25·2	23·6	21·7
20. Long Pond—Hyde Hall—Pushon (3x3x3 NPK) (POJ2878)													
	0	2	4	0	2	4	0	1	2				
Fall Plants													
Cane	25·8	101	103	23·7	118	114	24·5	93	128	15·2	—	—	16·3
Sucrose ..	10·2	95	94	9·5	106	107	9·3	104	113	13·5	—	—	—
Sugar	2·7	94	95	2·3	122	118	2·3	97	144	20·9	—	—	23·9
1st Ratoons													
Cane	30·8	109	125	34·5	92	106	29·9	116	128	18·5	—	—	21·3
21. Monymusk—Springfield—Priscilla 2 (3x3x3 NPK) (B3439)													
	0	2	4	0	3	6	0	1	2				
Not reaped as plants													
1st Ratoons													
Cane	18·8	89	107	18·6	96	102	19·7	91	91	16·2	—	—	—
Sucrose ..	10·0	103	102	10·2	100	100	10·3	101	96	7·7	—	—	—
Sugar	1·7	91	107	1·7	96	104	1·8	92	87	19·6	—	—	—
2nd Ratoons													
Cane	22·0	112	107	23·9	97	96	23·1	100	103	17·1	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
22. New Yarmouth—Dry River—Section 41 (3x3x3 NPK) (B3439)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	32·4	114	112	34·8	102	101	34·9	100	103	14·5	—	—	—
Sucrose ..	13·2	103	97	13·4	99	98	13·6	96	95	6·0	—	—	—
Sugar	4·3	118	108	4·7	101	100	4·8	95	97	15·8	—	—	—
1st Ratoons													
Cane	21·6	138	145	27·3	102	100	27·3	96	106	15·4	19·8	—	—
2nd Ratoons													
Cane	13·8	164	150	18·8	100	105	19·3	96	101	23·4	32·4	—	—
Pol % cane ..	14·7	102	99	14·8	99	102	14·9	101	99	8·3	—	—	—
Pol	2·0	170	151	2·8	99	106	2·9	95	98	26·9	37·9	—	—
23. Richmond/Llandovery—Llandovery—Alligator Hole (3x3x3 NPK) (B37161)	0	2	4	0	2	4	0	1	2				
Not reaped as plants													
1st Ratoons													
Cane	34·1	111	123	35·6	113	109	36·0	112	105	19·4	—	—	—
Sucrose ..	8·2	106	106	8·6	94	105	7·8	114	112	8·6	—	—	9·4
Sugar	2·8	118	129	3·1	106	113	2·8	128	117	22·3	26·0	—	—
24. Richmond/Llandovery—Llandovery—Well Piece 3 (3x3x3 NPK) (B4362)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	46·8	99	108	47·8	99	102	46·9	100	107	7·1	7·3	—	—
Sucrose ..	9·2	83	100	8·1	116	107	9·2	92	92	14·5	13·8	—	—
Sugar	4·3	82	108	3·9	113	109	4·3	92	99	16·5	16·0	—	—
25. Richmond/Llandovery—Richmond—Cove 2 (3x3x3 NPK) (B4362)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	34·5	110	118	38·8	95	97	37·7	104	97	12·0	13·1	—	—
Sucrose ..	11·6	98	92	10·7	101	113	12·1	90	89	17·2	—	—	—
Sugar	4·1	105	107	4·2	97	110	4·6	94	85	26·4	—	—	—
26. Richmond/Llandovery—Richmond—Richmond Piece	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	78·4	103	103	77·2	106	104	8·14	96	98	6·3	—	—	—
1st Ratoons													
Cane	48·6	111	111	51·3	100	105	54·1	96	94	10·3	11·1	—	—
Sucrose ..	9·7	98	98	9·6	96	101	9·6	100	98	10·3	—	—	—
Sugar	4·7	108	108	5·1	96	105	5·2	95	92	12·9	—	—	—
27. Richmond/Llandovery—Richmond—Sam Darling (3x3x3 NPK) (B3439)	0	2	4	0	4	8	0	1	2				
Fall Plants													
Cane	40·1	94	101	40·4	98	96	37·4	107	110	11·3	—	—	—
Sucrose ..	13·3	100	103	13·1	105	102	13·5	98	101	4·9	—	—	—
Sugar	5·3	94	104	5·3	103	98	5·0	105	112	9·6	—	—	10·2
1st Ratoons													
Cane	23·9	113	133	26·5	110	102	25·2	115	112	13·4	15·5	—	—
Sucrose ..	14·1	97	101	14·1	98	100	13·7	104	105	4·8	—	—	—
Sugar	3·4	110	136	3·8	108	102	3·5	119	117	15·1	17·4	—	17·0
2nd Ratoons													
Cane	21·3	131	140	25·3	105	108	24·4	118	107	17·4	21·6	—	—
Sucrose ..	14·1	100	98	14·0	98	102	13·9	99	104	5·0	—	—	—
Sugar	3·0	132	138	3·6	102	110	3·4	116	110	18·8	23·3	—	—
28. Rose Hall—Calabash II (3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	44·6	100	117	46·8	100	101	47·0	97	104	3·9	4·2	—	4·0
29. Rose Hall—Surround I (2x2x2 NPK) (B37161)	0	2		0	3		0	1					
Spring Plants													
Cane	14·1	95		13·8	100		12·5	121		12·0	—	—	15·3
1st Ratoons													
Cane	15·8	126		17·4	106		17·1	109		12·1	15·8	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
30. Serge Island—Hall Head—Gutter Piece (3x3x3 NPK) (B3439)	0	3	6	0	4	8	0	1	2				
Spring Plants													
Cane	23·6	107	99	24·5	102	92	23·2	100	111	22·1	—	—	—
Sucrose ..	13·2	98	96	12·9	99	102	12·6	102	108	5·3	—	—	5·5
Sugar	3·1	104	95	3·2	101	93	2·9	102	119	23·9	—	—	—
1st Ratoons ..													
Cane	20·2	115	142	22·9	106	109	22·8	111	105	17·1	20·4	—	—
31. Sevens—Parnassus—Section 82 (3x3x3 NPK) (B41227)	0	2	4	0	3	6	0	1	2				
Spring Plants													
Cane	25·3	104	112	27·2	100	94	27·9	91	95	16·8	—	—	—
Sucrose ..	10·3	106	101	10·6	96	106	10·6	97	101	6·3	—	—	—
Sugar	2·6	110	113	2·9	96	95	3·0	88	96	16·8	—	—	—
1st Ratoons													
Cane	30·9	110	128	35·6	101	91	36·3	96	91	16·2	18·3	—	—
Pol % cane ..	12·5	99	98	12·7	94	98	11·4	115	112	11·0	—	—	12·0
Pol	3·8	107	126	4·5	95	87	4·1	110	101	15·7	17·5	—	—
2nd Ratoons													
Cane	47·6	94	95	48·3	89	97	45·3	105	99	11·2	—	—	—
32. United Estates—Enfield—Section 10 (3x3x3 NPK) (B41227)	0	2	4	0	1½	3	0	1	2				
Fall Plants													
Cane	59·9	101	101	59·7	98	105	53·0	117	124	8·1	—	—	9·2
Sucrose ..	11·3	96	97	11·6	96	89	10·8	104	102	11·2	—	—	—
Sugar	6·8	97	98	7·0	93	94	5·7	121	127	12·5	—	—	14·6
1st Ratoon													
Cane	60·9	92	99	58·5	101	101	52·7	116	120	10·5	—	—	10·5
33. United Estates—New Hall—Newmans 4 (4x3x2 NPK) (B42231)	0	2	4	6	0	1	2	0	2				
Fall Plants	Not reaped as plants												
1st Ratoons													
Cane	27·1	124	151	159	37·1	96	97	35·0	107	5·4	9·8	—	5·4
2nd Ratoons													
Cane	23·3	142	171	182	33·6	106	102	33·3	108	9·4	19·1	—	—
34. United Estates—New Works—Section 27 (3x3x3 NPK) (B41227)	0	2	4	0	1½	3	0	1	2				
Fall Plants													
Cane	57·9	105	112	57·3	111	109	52·8	120	127	12·5	13·3	—	—
Sucrose ..	11·4	107	109	12·0	101	99	11·8	99	107	9·0	—	—	—
Sugar	6·6	111	121	6·9	112	108	6·2	119	135	14·8	16·5	—	17·5
1st Ratoon													
Cane	45·3	114	123	46·9	111	115	46·2	111	120	10·5	11·8	11·4	11·6
35. United Estates—White Water—Section 19 (3x3x3 NPK) (B4362)	0	2	4	0	1	2	0	1	2				
Spring Plants													
Cane	39·4	116	121	41·6	116	103	42·0	109	108	14·3	16·1	—	—
Sucrose ..	14·3	100	101	14·3	101	100	14·4	98	100	4·6	—	—	—
Sugar	5·6	117	123	5·9	118	102	6·0	107	108	11·5	13·1	13·3	—
1st Ratoons													
Cane	31·5	129	152	38·3	107	107	38·4	107	105	8·8	8·8	—	—
Sucrose ..	14·1	102	98	14·0	102	101	14·3	96	100	5·0	—	—	—
Sugar	4·5	131	148	5·3	108	108	5·5	104	105	7·8	9·9	—	—
36. United Estates—Windsor Park—Section 10 (B4362)	0	2	4	0	1	2	0	1	2				
Spring Plants													
Cane	31·6	112	131	35·4	107	100	35·0	102	108	9·4	10·8	—	—
Sucrose ..	16·3	101	100	16·4	100	100	16·4	99	100	3·8	—	—	—
Sugar	5·2	111	130	5·8	106	101	5·7	101	109	9·2	10·5	—	—
1st Ratoons													
Cane	28·2	141	183	39·3	104	101	40·4	96	100	7·8	7·8	—	—
Sucrose ..	15·3	102	98	15·4	99	99	15·2	99	101	3·6	—	—	—
Sugar	4·3	144	179	6·0	102	99	6·1	95	101	8·2	11·6	—	—

MISCELLANEOUS FERTILIZER EXPERIMENTS

(i) NITROGEN EXPERIMENTS

37. Innswood—Warwick Castle (Laid out on light ratoon fields)

	Cwt. per acre sulphate of ammonia (N) 0	2	4	6	S.E. % g.m.	Significant difference
1st Ratoons						
Cane	45·6	111	124	120	24·2	—

38. Jamaica Sugar Estates—Duckenfield 14 (Laid out on ratoon field) (B37172)

	Cwt. per acre sulphate of ammonia (N) 0	1½	3	4½	6	S.E. % g.m.	Significant difference
1st Ratoons							
Cane	34·5	107	121	135	137	7·7	12·8

39. Monymusk—Exeter—Section 68 (B42231)

	(A) Cwt. per acre sulphate of ammonia (N) 0	2½	5	7½	(B) 0	2½	5	7½	S.E. % g.m. (A)	(B)	Significant difference (A)	(B)
Spring Plants												
Cane	33·6	106	114	119					10·9		23·8	
Sucrose	12·7	93	101	101					3·2		—	
Sugar	4·3	104	115	119					12·8		—	
1st Ratoons												
Cane	38·2	96	108	108	34·2	107	111	114	10·7	11·8	—	—
Sucrose	10·9	103	105	100	11·0	99	103	101	4·7	3·6	—	—
Sugar	4·2	99	113	108	3·8	106	114	114	7·8	15·5	—	—
2nd Ratoons												
Cane	40·0	110	109	99	39·4	124	110	102	11·8	15·9	—	—
Sucrose	10·8	101	101	94	9·8	104	97	109	3·7	3·8	—	6·8
Sugar	4·3	111	110	93	3·8	130	108	111	13·2	16·9	—	—
3rd Ratoons												
Cane	43·6	107	105	105	33·4	109	96	106	3·6	21·1	—	—
Sucrose	11·1	98	98	96	11·1	101	100	99	5·1	5·5	—	—
Sugar	4·9	104	103	100	3·7	110	96	104	10·2	23·6	—	—

(ii) PHOSPHATE EXPERIMENTS

40. Frome—Masemure—Albany—Senior (B41227)

	Cwts. per acre 18% superphosphate 2	4	6	= Local phosphate cwt. per acre 18% superphosphate 2	4	6	= Mean cwt. per acre 18% superphosphate 2	4	6	S.E. % g.m. Levels	Type	Significant difference Levels	Type
Fall Plants													
Cane	60·2	95	98	94	95	98	58·3	98	101	9·3	8·7	—	—
Sucrose	12·9	102	106	100	99	105	12·9	101	106	14·4	5·4	—	—
Sugar	7·8	100	104	94	95	102	7·6	100	106	15·4	8·4	—	—

41. Jamaica Sugar Estates—Chiswick 3 (B4362)

	(A) Cwts. per acre 18% superphosphate 0	2	4	(B) 0	2	4	S.E. % g.m.	Significant difference A
	Direct effect on plants							
Fall Plants								
Cane	27·6	111	116				11·1	12·1
1st Ratoons		(A)			(B)		A	A B
Cane	31·3	105	107	31·1	104	110	6·3	— 6·5
Sucrose	16·6	96	101	16·1	103	102	7·2	— —
Sugar	5·2	100	108	5·0	108	113	5·7	5·8 6·0

(iii) ARTIFICAL AND ORGANIC AND LIMING EXPERIMENTS

42. Frome—Belle Isle—Meylersfield—Lime Kiln (Bagasse, knifing and nitrogen) (B41227)

	Tons per acre bagasse 0	10	20	30	Knifing 0	1	Cwt. per acre Sulphate of ammonia 3	6	S.E. % g.m. A	B	Significant difference B	K	N
Fall Plants													
Cane	38·1	91	90	82	30·9	124	31·7	118	15·5	10·2	—	10·8	6·8
Sucrose	13·9	98	101	100	14·0	99	14·0	99	3·9	2·8	—	—	—
Sugar	5·3	90	91	82	4·3	122	4·4	116	13·1	3·6	10·4	9·0	2·5

43. Holland—Factory Piece (2x2x2x2x2 NPK FPM Lime) (B4362)

	Cwt. S/A per acre 0	3	Cwt. 18% super per acre 0	4	Cwt. M/P per acre 0	2	Ton FPM per acre 0	15	Ton lime per acre 0	10	S.E. % g.m.	Significant difference N	P	K	F	L
Spring Plants																
Cane	30·8	108	32·0	100	31·8	102	29·6	116	32·8	96	11·2	—	—	—	9·1	—
Sucrose	12·6	97	12·7	95	12·6	96	12·6	96	12·4	100	3·2	—	—	—	—	—
Sugar	3·9	105	4·0	96	4·0	98	3·7	111	4·0	96	10·3	—	—	—	8·3	—
1st Ratoons																
Cane	34·6	101	33·8	105	33·2	109	33·7	106	34·7	100	13·3	—	—	—	—	—
2nd Ratoons																
Cane	34·2	106	33·8	109	32·8	116	32·9	115	34·9	103	8·0	—	6·4	6·6	6·5	—
% Pol	17·0	100	17·4	98	17·1	99	17·4	95	17·0	100	8·0	—	—	—	—	—
Pol	5·8	106	5·9	104	5·6	114	5·7	109	5·9	102	11·9	—	—	9·7	—	—

44. Jamaica Sugar Estates—Spanish Wood 24 (Filter mud) (B4362)

	Tons per acre filter mud				S.E. % g.m.	Significant difference
	0	5	10	15		
Spring Plants						
Cane	17·9	137	121	153	8·5	18·7

45. Monymusk—Exeter—Section 24 (2(2x2) NP bagasse filter press mud) (B41227)

	Cwt./S/A per acre		Cwt. 18% super per acre		Tons bagasse per acre		Tons FPM per acre		S.E. % g.m.	Significant difference			
	0	4	0	4	0	50	0	50					
Fall Plants													
Cane	59·1	106	58·6	108	58·5	108	58·5	108	18·4	—	—	—	—
Sucrose	7·2	103	8·1	104	8·5	94	8·3	98	6·8	—	—	—	—
Sugar	4·3	110	4·2	111	4·5	101	4·3	106	18·7	—	—	—	—
1st Ratoons													
Cane	34·6	99	31·9	116	33·3	107	33·7	105	28·2	—	—	—	—
Sucrose	10·5	94	10·3	96	10·2	99	10·4	95	6·1	—	—	—	—
Sugar	3·6	93	3·3	113	3·4	106	3·5	100	26·1	—	—	—	—
2nd Ratoons													
Cane	51·0	98	53·7	88	51·1	98	45·6	122	35·9	—	—	—	—
Sucrose	10·6	96	10·5	97	10·5	98	10·2	103	6·3	—	—	—	—
Sugar	5·3	95	5·6	86	5·4	94	4·6	126	31·7	—	—	—	—

46. Monymusk—Springfield—Section 25 (2(2x2) NP, bagasse, filter press mud) (B41227)

	Cwt. per acre sulphate of ammonia		Cwt. per acre 18% super-phosphate		Ton per acre bagasse		Ton per acre FPM		S.E. % g.m.	Significant difference			
	0	4	0	4	0	50	0	50					
Fall Plants													
Cane	49·9	109	54·0	93	50·2	107	50·7	105	13·8	—	—	—	—
Sucrose	9·1	94	8·9	99	8·6	106	9·1	94	11·1	—	—	—	—
Sugar	4·5	103	4·8	92	4·4	113	4·6	101	23·2	—	—	—	—
1st Ratoons													
Cane	28·8	111	32·3	89	32·7	86	28·5	114	16·3	—	—	—	—
Sucrose	9·6	97	9·8	93	9·3	103	9·8	93	11·6	—	—	—	—
Sugar	2·8	109	3·1	83	3·1	88	2·8	105	2·3	—	—	—	—
2nd Ratoons													
Cane	23·6	133	28·4	93	31·2	76	26·0	111	14·9	24·2	—	—	—
Sucrose	7·8	82	6·8	109	7·1	102	7·2	98	13·4	18·2	—	—	—
Sugar	1·9	109	1·9	101	2·2	78	1·8	110	22·5	—	—	—	—

47. Vale Royal—Arcadia—Burke Piece (NPK—filter press mud—dung, and method of application of dung) (B37161)

	Cwt. per acre sulphate of ammonia		Cwt. per acre 18% super-phosphate		Cwt. per acre muriate of potash		Cwt. per acre filter press mud		Cwt. per acre dung		Dung not buried	Dung buried	S.E. % g.m.	Significant difference					
	0	2	0	2	0	1½	0	10	0	11	A_0	A_1		N	P	K	F	D	A
Spring Plants																			
Cane	29·0	104	29·3	102	27·0	119	28·9	105	26·0	127	29·3	102	12·1	—	—	9·3	—	9·6	—
1st Ratoons																			
Cane	31·1	95	31·1	95	28·3	115	29·9	107	28·4	114	31·4	94	14·4	—	—	11·0	—	10·9	—

(iv) METHOD OF APPLICATION OF FERTILIZERS

48. Frome—Mint—Mint—Jamieson (NK method of application) (B37161)

	Cwt. per acre sulphate of ammonia			Cwt. per acre muriate of potash			Method of application		S.E. % g.m.		Significant difference		
	2	4	6	½	1½	2	Dibbling	Broadcasting	NK	Method of application			
Spring Plants													
Cane	29·1	107	106	31·0	96	97	30·1	102	16·2	10·9	—	—	—
Sucrose	14·5	99	99	14·2	102	102	12·9	100	3·3	3·2	—	—	—
Sugar	4·2	107	105	4·4	98	100	4·9	100	15·9	11·7	—	—	—
1st Ratoons													
Cane	28·6	110	114	30·5	102	102	31·2	98	10·4	13·1	10·0	—	—
Sucrose	13·2	99	97	12·9	99	103	12·9	102	18·0	16·0	—	—	—
Sugar	3·8	109	109	3·9	104	107	4·0	98	14·1	12·4	—	—	—
2nd Ratoons													
Cane	18·1	117	129	21·3	98	98	21·2	98	11·7	15·6	10·4	—	—
Sucrose	14·2	99	98	13·9	102	103	14·0	100	3·2	3·1	—	—	—
Sugar	2·6	116	127	3·0	99	101	3·0	98	11·9	15·5	12·0	—	—

PART 2

VARIETY X FERTILIZER EXPERIMENTS

1. Caymanas—Caymanas—T Piece (Variety x N x K)

CANE

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
Fall Plants											
B3439 ..	66·9	101	95	66·0	92	108	66·1	0	71·0	119	89
B4362 ..	118	139	124	136	126	125	129	1	107	104	113
B42231 ..	120	108	104	96	131	109	112	2	111	104	102
Mean ..	75·5	103	95	73·0	105	103	—	—	—	—	—
S.E. % g.m.				15·2							
		Variety		N		K					
Sig. Diff. ..		18·4		—		—					

SUCROSE

Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
12·5	96	92	12·0	96	100	12·0	0	12·6	95	102
105	101	97	102	98	109	105	1	101	102	90
101	108	102	105	107	105	108	2	103	106	47
12·8	100	95	12·5	99	103	—	—	—	—	—
S.E. % g.m. ..					6·1					
	Variety			N		K				
Sig. Diff. ..	—			—		—				

SUGAR

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
Fall Plants											
B3439	8·4	97	87	7·9	90	111	8·0	0	9·0	114	90
B4362	123	141	120	90	126	139	135	1	108	107	102
B42231	123	115	105	111	143	117	121	2	115	110	99
Mean	9·7	102	90	9·1	104	106	—	—	—	—	—
S.E. % g.m.				11·8							
		Variety		N		K					
Sig. Diff.		14·7		—		—					

CANE

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
1st Ratoons											
B3439	28·0	134	126	31·7	112	106	33·6	0	33·0	144	151
B4362	151	190	203	168	165	148	151	1	112	163	159
B42231	144	192	204	143	174	160	150	2	123	131	144
Mean	36·9	130	135	43·4	110	101	—	—	—	—	—
S.E. % g.m.				10·0							
		Variety		N		K					
Sig. Diff.		14·3		13·0		—					

2. Frome—Masemure—Long Corner (Variety x N x K)

CANE

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
Fall Plants											
B37161 ..	52·7	95	95	47·6	114	107	50·9	0	69·0	103	104
B41227 ..	112	111	124	123	124	136	120	1	97	104	110
B42231 ..	89	94	101	108	100	107	98	2	106	103	108
B4362 ..	96	104	103	113	113	109	104				
Mean ..	52·3	103	106	52·9	102	103					
S.E. % g.m. ..				7·2							
		Variety		N		K					
Sig. Diff. ..		8·0		—		—					

SUCROSE

Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
11·4	106	114	11·3	114	109	12·2	0	9·6	98	105
112	105	105	109	114	102	100	1	109	96	109
121	121	117	126	118	119	112	2	96	109	95
125	121	126	126	128	122	116	—	—	—	—
13·0	99	101	12·9	103	99			—	—	—
S.E. % g.m. ..					6·1					
	Variety			N		K				
Sig. Diff. ..	6·0			—		—				

SUGAR

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
Fall Plants											
B37161	6·1	101	107	5·4	129	117	6·2	0	9·0	100	107
B41227	124	117	130	135	143	140	121	1	104	97	119
B42231	107	114	117	136	117	127	110	2	99	110	100
B4362	119	125	129	141	145	133	121				
Mean	6·8	101	107	6·9	104	101					
S.E. % g.m.				6·2							
		Variety		N		K					
Sig. Diff.		7·3		5·8		—					

3. Monymusk—Morelands—Brick Yard (Variety x Nitrogen)

Variety	Cane: Cwt. per acre Sulphate of ammonia 0	3	6	Mean	Sucrose: Cwt. per acre Sulphate of ammonia 0	3	6	Mean	Sugar: Cwt. per acre Sulphate of ammonia 0	3	6	Mean
Spring Plants												
B37161	37·9	105	116	40·7	13·3	97	99	13·5	5·1	108	117	5·5
B41227	99	120	123	107	106	108	105	105	106	130	130	113
B42231	72	78	87	74	101	104	101	101	73	81	88	74
B4362	106	109	116	103	110	105	106	106	117	114	123	109
Mean	35·8	109	118	—	13·9	100	99	—	5·0	110	116	—
	Nitrogen		Variety		Nitrogen		Variety		Nitrogen		Variety	
S.E. % g.m.	6·5		12·8		4·72		2·6		7·9		12·7	
Sig. Diff.	5·2		12·3		—		2·6		6·3		12·5	
1st Ratoons												
B37161	32·6	119	132	38·2	12·8	101	96	12·2	4·0	120	127	4·6
B41227	122	138	156	118	98	97	101	100	119	134	158	118
B42231	96	101	122	90	96	98	96	98	91	99	117	88
B4362	142	136	143	120	97	102	97	100	137	139	140	120
Mean	37·5	107	120	—	12·1	102	100	—	4·5	110	121	—
	Nitrogen		Variety		Nitrogen		Variety		Nitrogen		Variety	
S.E. % g.m.	11·9		6·2		3·5		4·6		12·9		7·8	
Sig. Diff.	13·0		6·6		—		—		10·3		8·3	
2nd Ratoons												
B37161	33·5	129	116	38·6	11·3	94	97	11·0	3·8	122	112	4·2
B41227	134	131	135	116	95	99	90	97	127	129	122	113
B42231	119	91	95	89	98	99	100	102	117	90	95	91
B4362	129	143	132	117	100	99	97	102	102	141	127	119
Mean	40·5	102	99	—	11·1	99	98	—	4·5	102	96	—
	Nitrogen		Variety		Nitrogen		Variety		Nitrogen		Variety	
S.E. % g.m.	13·1		8·4		6·0		6·3		14·2		12·4	
Sig. Diff.	—		8·9		—		—		—		13·1	
3rd Ratoons												
B37161	20·9	158	181	30·6	11·0	99	96	10·9	2·3	157	173	3·3
B41227	93	170	206	107	99	97	98	100	92	165	202	107
B42231	88	124	172	87	97	101	101	101	86	126	173	89
B4362	98	171	221	112	97	96	96	98	95	165	211	109
Mean	19·8	165	206	—	10·9	100	99	—	2·2	164	203	—
	Nitrogen		Variety		Nitrogen		Variety		Nitrogen		Variety	
S.E. % g.m.	14·7		8·9		4·3		2·6		13·3		6·5	
Sig. Diff.	16·8		9·0		—		—		15·1		6·5	

4. Worthy Park—Blythe Piece 1 (Variety x Nitrogen)

Variety	Cane: Cwt. per acre Sulphate of ammonia 0	2	4	6	Mean	Sucrose: Cwt. per acre Sulphate of ammonia 0	2	4	6	Mean	Sugar: Cwt. per acre Sulphate of ammonia 0	2	4	6	Mean
Spring Plants															
B41227	36·7	116	116	120	41·5	11·9	91	82	89	10·7	4·3	107	98	109	4·4
B42231	90	92	99	104	97	104	103	98	95	110	95	97	99	101	95
B43214	117	106	115	118	101	87	92	91	85	98	105	100	106	102	100
B4362	87	107	112	113	93	102	112	105	107	117	90	121	120	123	110
Mean	36·1	107	113	115	—	11·6	101	96	96	—	4·2	109	109	112	—
S.E. % g.m.		7·2					5·9					7·0			
	Nitrogen		Variety			Nitrogen		Variety			Nitrogen		Variety		
Sig. Diff.	8·3		7·2			—		6·7			8·0		7·6		
1st Ratoons															
B41227	43·9	127	109	109	48·9	13·6	100	99	87	13·1	5·9	127	109	94	6·4
B42231	68	88	77	85	71	98	93	93	91	97	66	82	73	78	69
B43214	99	132	124	125	108	104	95	106	104	106	104	125	132	131	114
B4362	71	92	128	115	91	106	100	98	101	105	75	92	125	117	95
Mean	37·0	130	130	129	—	13·9	95	94	94	—	5·1	124	127	122	—
S.E. % g.m.		16·5					5·0					14·7			
	Nitrogen		Variety			Nitrogen		Variety			Nitrogen		Variety		
Sig. Diff.	20·3		15·3			—		5·4			18·6		14·8		

PART 3

RESULTS OF VARIETY EXPERIMENTS

A summary of the results of the variety experiments reaped in 1955 is presented below. Actual yields in tons cane per acre, % sucrose (or pol % cane*) and tons sugar per acre (or tons pol per acre*) obtained by the standard variety, are quoted, and the yields obtained from the other varieties are expressed as a percentage of the standard.

Variety	Cane				Pol % Cane* or Sucrose				Pol* or Sugar			
	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.
IRRIGATED ESTATES												
1. Innswood—St. Helen's 16 (spring planted 1951)												
B34104 ..	31·9	39·0	—	30·0	12·6	—	—	14·8	4·1	—	—	4·4
B41227 ..	116	113	—	114	89	—	—	93	103	—	—	103
B42231 ..	98	103	—	108	110	—	—	92	107	—	—	98
B4362 ..	91	97	—	95	108	—	—	107	99	—	—	99
S.E. % g.m. ..	6·6	4·7	—	14·7	9·3	—	—	10·9	10·5	—	—	15·7
Sig. Diff. ..	—	7·8	—	—	—	—	—	—	—	—	—	—
2. Monymusk—Exeter—Section 64 (fall planted 1951)												
B34104 ..	29·9	26·1	21·7		10·1	9·8	9·2		3·0	2·5	2·0	
B41227 ..	142	141	162		106	96	104		149	138	169	
B42231 ..	117	134	166		108	111	112		127	150	188	
B4362 ..	130	124	126		103	102	102		134	125	130	
B4503 ..	108	114	118		86	90	81		93	105	97	
MY3 ..	97	93	113		102	96	102		99	89	116	
S.E. % g.m. ..	10·2	18·1	22·4		6·2	8·1	9·1		11·5	18·4	26·3	
Sig. Diff. ..	14·1	25·7	35·2		7·5	9·6	11·0		16·2	26·1	42·3	
3. Monymusk—Hillside—Ladell 3 (fall planted 1952)												
B3439 ..	58·9	44·4			7·0	—			4·1	—		
B41227 ..	123	86			93	—			117	—		
B42231 ..	111	82			112	—			124	—		
B4362 ..	103	85			92	—			97	—		
POJ2878 ..	103	77			90	—			93	—		
MY3 ..	71	73			96	—			69	—		
S.E. % g.m. ..	15·9	10·7			10·9	—			17·0	—		
Sig. Diff. ..	19·5	10·8			14·0	—			20·5	—		
4. Monymusk—Hillside—Storehouse (spring planted 1951)												
B42231 ..	59·3	64·9	54·2	34·5	11·7	10·4	9·8	11·4	6·9	6·8	5·3	4·0
B41227 ..	90	108	118	126	76	94	96	105	70	101	116	132
B4362 ..	120	115	111	100	78	87	101	103	95	101	113	103
B44341 ..	71	78	86	89	79	96	103	105	56	75	89	94
B4503 ..	86	69	72	81	70	81	87	97	61	57	64	78
B46378 ..	90	80	90	95	85	81	98	100	77	65	89	94
B46384 ..	71	73	68	71	95	89	96	110	70	64	65	78
PR2 ..	97	63	54	74	84	98	116	106	83	62	63	81
PR3 ..	96	77	69	82	92	94	110	112	89	73	76	92
S.E. % g.m. ..	11·2	12·5	13·3	19·5	9·0	8·4	5·7	5·8	14·6	14·6	15·0	20·7
Sig. Diff. ..	9·9	10·4	16·5	25·9	10·4	—	8·4	10·0	11·0	11·0	18·8	28·6
5. Monymsuk—Morelands—Cotton Walk 3 (fall planted 1951)												
B37161 ..	64·4	47·2	57·7		8·4	8·5	6·9		5·3	3·9	3·9	
B41227 ..	114	125	100		103	100	108		116	124	107	
B42231 ..	100	101	84		114	115	130		116	119	109	
B4362 ..	84	94	83		102	105	105		87	97	88	
S.E. % g.m. ..	11·2	14·7	14·1		6·1	10·6	10·3		4·4	12·9	15·5	
Sig. Diff. ..	18·6	—	—		—	—	19·7		8·0	—	—	
6. Monymsuk—Springfield—Carvers 2 (spring planted 1952)												
B37161 ..	46·4	45·2	36·5		10·0	9·5	9·9		4·6	4·3	3·6	
B41227 ..	130	106	116		107	93	92		125	100	107	
B42231 ..	105	106	92		107	98	98		110	106	91	
B4362 ..	108	104	114		95	104	102		81	109	117	
POJ2878 ..	106	85	85		98	101	98		101	86	84	
MY3 ..	82	82	73		92	91	99		75	74	72	
S.E. % g.m. ..	8·8	12·0	12·5		7·6	10·9	8·0		10·3	17·5	15·1	
Sig. Diff. ..	11·2	14·0	14·6		—	—	—		12·7	20·1	17·1	

Variety	Cane				Pol % Cane* or Sucrose				Pol* or Sugar			
	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.
7. New Yarmouth—Caswell Hill—Section 39 (fall planted 1952)												
B3439 ..	59·8	23·3			14·3	15·9*			8·6	3·7		
B37161 ..	144	151			86	98			124	149		
B41227 ..	146	164			93	97			135	159		
B42231 ..	127	177			102	100			129	176		
B4362 ..	127	152			98	101			123	153		
S.E. % g.m. ..	13·8	18·1			8·7	6·4			13·8	13·1		
Sig. Diff. ..	24·4	37·2			—	—			—	26·5		
8. New Yarmouth—Dry River—Section 39 (spring planted 1952)												
B3439 ..	25·5	21·3	20·2		13·1	—	14·4*		3·3	—	2·9*	
B37161 ..	115	127	101		96	—	105		112	—	106	
B41227 ..	103	133	123		97	—	107		100	—	126	
B42231 ..	119	166	109		95	—	105		114	—	116	
B4362 ..	107	154	117		96	—	111		102	—	131	
S.E. % g.m. ..	16·8	20·5	26·3		8·3	—	6·2		18·6	—	27·7	
Sig. Diff. ..	—	38·4	—		—	—	—	—	—	—	—	—
9. New Yarmouth—Rowington—Section 34 (fall planted 1952)												
B3439 ..	34·6	21·3			11·2	14·2*			3·9	3·0*		
B37161 ..	103	128			94	92			97	118		
B41227 ..	104	176			94	96			100	169		
B42231 ..	116	147			106	97			122	144		
B4362 ..	104	141			98	98			101	138		
S.E. % g.m. ..	15·9	9·9			6·4	9·2			20·6	9·0		
Sig. Diff. ..	—	19·0			—	—			—	16·5		
10. Sevens—Parnassus—Sam Wint 6 (fall planted 1950)												
B3439 ..	33·9	40·6	28·3	33·2	14·5	14·3	12·0	9·0*	4·9	5·8	3·5	4·9*
B37161 ..	124	126	165	139	91	92	103	101	114	115	116	140
B41227 ..	121	149	159	170	88	89	98	102	106	134	154	172
B42231 ..	103	112	133	137	100	104	112	95	102	117	147	128
B4362 ..	99	130	148	128	105	103	108	108	103	135	158	139
S.E. % g.m. ..	14·5	15·5	17·5	12·7	4·2	3·7	7·2	9·0	14·2	16·1	18·5	15·6
Sig. Diff. ..	—	21·2	33·9	23·6	6·0	5·1	10·3	—	—	21·3	30·9	29·1
11. Sevens—Parnassus—Section 82 (spring planted 1952)												
B3439 ..	34·4	22·1	38·6		11·9	12·1*	14·2*		4·0	2·7*	5·5*	
B37161 ..	92	121	137		102	93	109		95	112	149	
B41227 ..	75	136	142		89	98	102		68	132	145	
B42231 ..	91	133	136		98	103	103		91	139	141	
B4362 ..	118	130	111		98	113	104		117	145	114	
S.E. % g.m. ..	7·0	15·7	13·1		5·0	11·1	9·3		13·7	20·0	16·3	
Sig. Diff. ..	9·2	—	22·4		—	—	—		17·8	—	29·1	
12. Sevens—Parnassus—Sandy Gully 1 (spring planted 1954)												
B3439 ..	26·4				—				—			
B41227 ..	127				—				—			
B42231 ..	90				—				—			
B4362 ..	164				—				—			
S.E. % g.m. ..	44·0				—				—			
Sig. Diff. ..	—				—				—			
13. Sevens—Parnassus—Sandy Gully 6 (fall planted 1951)												
B3439 ..	47·3	23·0	20·5		12·0	—	14·9*		5·7	—	3·1*	
B37161 ..	102	165	166		85	—	96		87	—	159	
B41227 ..	109	152	207		86	—	97		95	—	203	
B42231 ..	118	174	195		102	—	104		120	—	204	
B4362 ..	92	163	149		98	—	100		90	—	151	
S.E. % g.m. ..	13·4	14·6	10·2		8·2	—	4·9		13·6	—	12·1	
Sig. Diff. ..	—	30·4	22·9		12·6	—	—		18·4	—	27·2	

HIGH RAINFALL AREAS

Variety	Cane P.	Cane 1st R.	Cane 2nd R.	Cane 3rd R.	Pol % Cane* or Sucrose P.	Pol % Cane* or Sucrose 1st R.	Pol % Cane* or Sucrose 2nd R.	Pol % Cane* or Sucrose 3rd R.	Pol* or Sugar P.	Pol* or Sugar 1st R.	Pol* or Sugar 2nd R.	Pol* or Sugar 3rd R.
14. Appleton—Raheen—Salmon Piece (fall planted 1952)												
B37161 ..	67·6	38·5			12·3	15·6*			8·3	6·0*		
B37172 ..	96	101			109	95			105	95		
B41227 ..	116	138			98	96			113	132		
B42231 ..	100	113			106	110			106	124		
B43214 ..	108	124			90	95			98	118		
B4362 ..	101	103			106	103			107	107		
S.E. % g.m. ..	5·7	9·1			6·0	4·8			8·5	11·2		
Sig. Diff. ..	7·2	10·9			9·9	5·7			—	15·1		
15. Serge Island—Pasture Piece (spring planted 1954)												
B37172 ..	35·9				—				—			
B4362 ..	104				—				—			
S.E. % g.m. ..	8·7				—				—			
Sig. Diff. ..	—				—				—			

DRY NORTH COAST AREA

16. Barnett—Fairfield—Golf Course (spring planted 1954)												
B37161 ..	32·9				13·4				4·4			
B41227 ..	136				94				129			
B4362 ..	137				101				140			
B47361 ..	129				88				111			
S.E. % g.m. ..	6·9				5·4				9·1			
Sig. Diff. ..	14·9				8·9				19·0			
17. Long Pond—Hyde Hall—Cashew (spring planted 1953)												
B37161 ..	23·4	36·1			—	—			—	—		
B41227 ..	144	115			—	—			—	—		
B42231 ..	136	98			—	—			—	—		
B4362 ..	105	103			—	—			—	—		
B47361 ..	77	87			—	—			—	—		
B47419 ..	79	66			—	—			—	—		
Co331 ..	119	113			—	—			—	—		
POJ2878 ..	90	75			—	—			—	—		
S.E. % g.m. ..	14·6	17·8			—	—			—	—		
Sig. Diff. ..	22·9	24·7			—	—			—	—		
18. Long Pond—Long Pond—Fisher (fall planted 1952)												
B3439 ..	13·2	30·5			8·8	—			1·2	—		
B37161 ..	91	109			108	—			97	—		
B37172 ..	123	115			115	—			140	—		
B41227 ..	124	138			87	—			108	—		
B42231 ..	147	146			116	—			170	—		
B4362 ..	142	143			80	—			113	—		
Co421 ..	120	132			98	—			117	—		
S.E. % g.m. ..	10·1	6·4			10·0	—			16·1	—		
Sig. Diff. ..	13·3	8·8			10·9	—			21·2	—		
19. Richmond/Llandovery—Llandovery—Big Morass (fall planted 1952)												
B3439 ..	59·7	27·1			14·3	13·8			8·5	3·7		
B37161 ..	104	143			80	103			84	148		
B41227 ..	156	200			77	100			124	202		
B42231 ..	123	164			80	111			99	182		
B4362 ..	122	160			86	99			100	160		
B44254 ..	155	127			59	88			92	112		
B46293 ..	119	136			62	91			90	125		
B46384 ..	116	114			88	114			103	130		
S.E. % g.m. ..	12·4	16·9			11·3	7·1			22·1	19·1		
Sig. Diff. ..	18·0	28·3			14·1	8·4			—	32·4		

VARIETY SELECTION—"FIRST 500 SEEDLINGS. 1st STAGE LATTICE EXPERIMENTS 1953—1955 RESULTS

Note.—Actual yields are quoted for the standard variety, with yields of the other varieties expressed as a percentage of the standard.

Worthy Park—Gruber I

Parentage	Variety	Cane			% Sucrose			Sugar		
		Plants	1st ratoons	2nd ratoons	Plants	1st ratoons	2nd ratoons	Plants	1st ratoons	2nd ratoons
	Standard	43·5	22·2	22·8	12·0	(11·8)	(12·8)	5·5	(2·5)	(2·9)
B4145 x	A4	91	124	154	71	80	82	66	100	128
B42231	A5	40	127	97	76	96	98	30	123	100
	A14	59	96	109	102	98	89	57	95	102
	A17	63	124	116	98	101	102	58	125	121
	A26	143	199	188	80	100	91	111	199	167
	A29	85	120	125	85	106	100	70	128	125
	A31	90	98	107	88	105	107	82	104	114
	A32	88	144	132	91	102	87	78	147	121
	A34	86	115	103	85	108	106	71	124	119
	A49	98	145	144	73	89	91	67	133	135
B44341 x	B226	114	137	123	112	95	107	122	128	136
B3337	B264	102	111	135	90	89	87	86	100	118
	B266	66	79	91	91	98	88	57	101	84
	B267	116	145	188	85	105	93	97	159	176
	B270	72	145	177	61	109	98	42	160	114
B3439 x	C295	83	101	94	100	116	107	77	121	101
B42231	C296	108	166	139	111	104	91	113	160	131
	C299	108	129	109	96	109	102	104	143	116
	C300	109	109	74	83	83	85	89	90	69
	C309	84	163	141	111	109	103	92	182	156
	C311	79	120	106	76	75	70	57	128	78
	C316	67	100	74	113	109	103	75	110	101
	C322	84	126	139	91	110	97	70	136	82
	C324	74	161	79	87	118	98	62	196	99
	C325	62	83	93	106	117	102	62	99	117
	C326	110	139	114	109	96	102	115	132	150
	C327	107	104	147	76	100	103	105	104	98
	C329	106	145	94	112	103	90	112	130	161
	C330	160	166	154	105	105	105	157	177	57
	C336	44	80	60	92	114	88	40	98	113
	C340	87	152	114	74	96	96	71	150	106
	C341	120	120	102	85	123	104	100	149	158
B3439 x	D78	100	147	161	106	96	96	101	140	160
B38192	D89	69	152	150	98	119	107	64	181	150
	D95	113	177	146	100	103	98	110	179	113
	D104	69	98	75	94	104	95	63	103	70
B35207 x	E150	147	183	233	89	94	90	131	174	214
POJ2878	E155	90	168	192	107	102	93	89	175	185
	E160	130	197	205	90	95	90	114	191	190
	E162	133	231	251	105	102	98	132	296	266
	E168	141	217	212	75	92	87	101	206	192
	E174	137	172	145	91	83	81	118	144	114
	E175	114	163	192	63	89	93	69	144	183
	E178	131	219	190	76	88	86	99	196	166
	E181	145	191	194	67	98	94	94	190	189
	E183	86	144	138	99	92	89	85	139	122
	E196	122	181	180	69	90	106	83	162	177
B4362 x	F364	160	236	236	86	107	104	132	258	250
B34104	F376	101	144	165	108	93	103	104	136	171
	F388	92	164	72	99	115	115	86	193	88
	F403	122	193	213	103	104	98	119	202	207
	F405	126	163	137	93	96	98	117	156	138
	F407	85	115	124	91	94	95	75	110	122
B45170 x	G482	147	129	179	85	94	98	130	127	175
B41227	G483	137	207	221	90	77	105	121	229	236
	G489	117	187	138	104	108	104	114	204	143
	G491	109	206	229	110	96	101	114	208	218
B35206 x	H442	59	134	134	93	104	99	53	140	133
POJ2878	H444	103	200	160	111	122	106	112	267	173
	H445	85	152	107	85	117	111	76	157	123
	H454	115	185	189	98	111	115	113	208	218
	H457	115	158	145	91	89	102	100	142	150
	H459	123	177	221	94	97	96	111	171	220
	H463	72	159	104	95	104	91	65	161	103
Co421 x	I213	136	217	243	67	82	92	88	182	231
B37193	I216	144	203	245	75	102	104	102	214	254
B3439 x	J276	116	193	187	65	94	87	85	185	163
Co419	J284	119	186	204	86	95	86	97	176	177
	J285	134	176	220	106	98	92	133	174	206
	B37161	130	156	180	109	107	99	135	167	177
	B41227	156	228	233	82	92	92	125	215	220
	B42231	159	148	132	91	109	103	139	176	155
	B4362	165	226	198	120	128	114	185	296	235
	B47258	106	174	203	91	104	102	92	183	212
	B47306	124	194	192	98	100	97	116	199	193
	B47310	162	217	243	90	95	106	139	205	267
	B47312	103	184	219	83	94	88	84	174	196
	B47320	127	142	222	85	100	81	115	124	188
	B47361	119	193	158	94	95	94	106	186	167
	B47419	133	197	163	93	99	88	120	189	148
S.E. % g.m.		30·0	17·9	14·6	19·1	19·2	5·4	26·9	21·4	16·5
Sig. Diff. ..		28·2	28·1	44·8	30·0	—	10·5	51·1	34·3	50·0

FINAL STAGE. VARIETY SELECTION TRIALS—"FIRST 500" SEEDLINGS

(Incomplete Block)

Note.—Actual yields are quoted for the standard variety, with the yields of the other varieties expressed as a percentage of the standard.

Variety	Monymusk Morelands-Cudjoe 3			Monymusk Morelands-Vizzards Run II			Worthy Park Bristol Hole 3			Average		
	Plants			Plants			Plants			Plant results		
	Per cent.			Per cent.			Per cent.			Per cent.		
	Cane	Sucrose	Sugar	Cane	Sucrose	Sugar	Cane	Sucrose	Sugar	Cane	Sucrose	Sugar
Standard	50·9	4·9	2·5	34·4	5·1	1·8	37·4	13·4	5·0	—	—	—
A17† (B51401)*	83	111	95	—	—	—	—	—	—	83 (1)	111 (1)	95 (1)
A26† (B51402)*	—	—	—	101	90	93	—	—	—	101 (1)	90 (1)	93 (1)
A32† (B51403)*	—	—	—	98	78	83	—	—	—	98 (1)	78 (1)	83 (1)
C330† (B51423)*	—	—	—	—	—	—	93	96	90	93 (1)	96 (1)	90 (1)
D95† (B51406)*	93	83	78	—	—	—	—	—	—	93 (1)	83 (1)	78 (1)
E150† (B51407)*	—	—	—	99	94	92	—	—	—	99 (1)	94 (1)	92 (1)
E162† (B51410)*	99	101	102	—	—	—	93	105	98	96 (2)	103 (2)	100 (2)
E168† (B51411)*	80	90	75	91	93	82	—	—	—	86 (2)	92 (2)	79 (2)
F364† (B51413)*	—	—	—	96	73	69	—	—	—	96 (1)	73 (1)	69 (1)
F403† (B51421)*	—	—	—	—	—	—	95	97	92	95 (1)	97 (1)	92 (1)
G483† (B51414)*	105	116	119	114	105	118	—	—	—	115 (2)	111 (2)	119 (2)
G491† (B51422)*	—	—	—	—	—	—	87	95	82	87 (1)	95 (1)	82 (1)
H444† (B51415)*	—	—	—	—	—	—	83	107	89	83 (1)	107 (1)	89 (1)
I213† (B51417)*	80	90	71	92	100	89	—	—	—	86 (2)	95 (2)	80 (2)
I216† (B51418)*	91	72	66	94	69	65	—	—	—	93 (2)	71 (2)	66 (2)
J284† (B51419)*	—	—	—	103	125	127	—	—	—	103 (1)	125 (1)	127 (1)
J285† (B51420)*	—	—	—	—	—	—	107	101	109	107 (1)	101 (1)	109 (1)
B41227	84	122	102	105	90	96	—	—	—	95 (2)	106 (2)	99 (2)
B42231	84	137	114	114	111	126	—	—	—	99 (2)	124 (2)	120 (2)
B4362	—	—	—	—	—	—	102	103	106	102 (1)	103 (1)	106 (1)
B47258	81	83	69	102	94	98	—	—	—	92 (2)	89 (2)	83 (2)
B47310	79	77	63	—	—	—	—	—	—	79 (1)	77 (1)	63 (1)
B47361	102	108	111	—	—	—	—	—	—	102 (1)	108 (1)	111 (1)
S.E. % g.m.	12·6	21·2	26·1	11·3	27·2	26·9	8·6	9·9	11·7	—	—	—
Sig. Diff.	16·3	30·6	33·8	—	—	—	11·9	—	16·5	—	—	—

† Temporary Jamaica identification.
* Permanent "B" numbers.
Figures in brackets under "Average" Column represent number of experiments from which averages were obtained.

VARIETY SELECTION—"Second 500" Seedlings. 1st STAGE LATTICE EXPERIMENTS

Note.—Actual yields are quoted for the standard variety, with yields of other varieties expressed as a percentage of the standard.

Variety	Cane										% Sucrose										Sugar										Plant Results Average		
	1	2	3	4	5	6	7	8	9 (a)	9 (b)	1	2	3	4	5	6	7	8	9 (a)	9 (b)	1	2	3	4	5	6	7	8	9 (a)	9 (b)	Cane	% sucrose	Sugar
Standard	65·3	26·7	47·5	47·5	58·0	70·2	49·0	42·6	39·5	29·8	15·3	15·3	—	15·2	9·9	9·7	9·4	13·2	11·3	11·6	4·9	4·2	—	7·2	5·7	6·8	4·6	5·7	4·6	3·5	—	—	—
52† (B52401)* ..	89	—	74	97	27	59	—	—	71	104	89	—	—	90	73	96	—	—	71	102	82	—	—	87	20	56	—	—	48	103	70 (6)	84 (5)	59 (5)
64† (B52402)* ..	84	94	113	107	70	81	78	—	83	75	101	84	—	103	105	102	98	—	91	94	87	78	—	110	73	81	75	—	72	68	71 (8)	98 (7)	82 (7)
70† (B52403)* ..	59	61	79	—	42	66	—	—	66	65	92	82	—	—	99	97	—	—	67	83	56	49	—	—	40	65	—	—	43	51	62 (6)	87 (5)	51 (5)
77† (B52404)* ..	50	—	42	—	19	37	—	—	62	77	87	—	—	—	87	95	—	—	89	96	43	—	—	—	16	36	—	—	51	71	43 (5)	90 (4)	37 (4)
235† (B52405)* ..	104	74	162	128	107	81	98	—	73	85	95	84	—	90	82	98	86	—	73	92	100	62	—	115	87	79	85	—	53	77	103 (8)	87 (7)	83 (7)
370† (B52406)* ..	70	64	97	96	42	96	—	—	—	—	93	85	—	98	82	111	—	—	—	—	66	55	—	94	34	105	—	—	—	—	78 (6)	91 (5)	71 (5)
433† (B52407)* ..	107	101	153	122	66	107	87	—	83	91	86	91	—	91	82	99	107	—	87	90	90	91	—	111	54	106	95	—	72	81	103 (8)	92 (7)	88 (7)
443† (52408)* ..	91	87	110	—	58	79	98	—	—	—	76	77	—	—	67	90	78	—	—	—	72	66	—	—	39	71	75	—	—	—	87 (6)	78 (5)	65 (5)
450† (B52409)* ..	111	—	161	—	56	86	—	—	69	126	87	—	—	—	90	99	—	—	88	99	101	—	—	—	50	87	—	—	59	118	97 (5)	91 (4)	74 (4)
B41227	—	—	—	—	—	—	—	—	100	125	—	—	—	—	—	—	—	—	87	106	—	—	—	—	—	—	—	—	82	131	100 (1)	87 (1)	82 (1)
B42231	—	—	—	—	62	—	—	—	—	—	—	—	—	—	93	—	—	—	—	—	—	—	—	—	58	—	—	—	—	—	62 (1)	93 (1)	58 (1)
B4362	—	—	—	—	—	—	57	—	—	—	—	—	—	—	—	—	85	—	—	—	—	—	—	—	—	—	49	—	—	—	57 (1)	85 (1)	49 (1)
B48125	84	—	117	—	30	38	—	—	41	98	104	—	—	—	107	100	—	—	83	90	89	—	—	—	31	39	—	—	31	86	62 (5)	100 (5)	48 (5)
B48126	67	—	54	—	21	72	—	—	66	140	93	—	—	—	111	93	—	—	81	96	64	—	—	—	24	67	—	—	52	131	56 (5)	95 (4)	52 (4)
B49166	—	—	—	—	—	—	90	—	—	—	—	—	—	—	—	—	104	—	—	—	—	—	—	—	—	—	95	—	—	—	90 (1)	104 (1)	95 (1)
B49198	103	88	—	120	70	—	—	105	—	—	79	79	—	61	56	—	—	76	—	—	81	69	—	73	40	—	—	79	—	—	97 (5)	70 (5)	68 (5)
B49229	—	76	—	104	—	—	74	—	—	—	—	95	—	91	—	—	82	—	—	—	—	71	—	95	—	—	60	—	—	—	85 (3)	89 (3)	75 (3)
B49311	—	—	—	—	—	—	89	—	—	—	—	—	—	—	—	—	105	—	—	—	—	—	—	—	—	—	93	—	—	—	89 (1)	105 (1)	93 (1)
B49353	96	91	—	123	—	—	70	—	—	—	101	90	—	96	—	—	125	—	—	—	101	82	—	118	—	—	88	—	—	—	95 (4)	103 (4)	97 (4)
B49355	—	—	—	101	—	—	—	—	—	—	—	—	—	88	—	—	—	—	—	—	—	—	—	89	—	—	—	—	—	—	101 (1)	88 (1)	89 (1)
B49377	—	94	—	—	—	—	102	90	—	—	—	87	—	—	—	—	100	89	—	—	—	79	—	—	—	—	102	79	—	—	95 (3)	92 (3)	87 (3)
B49396	—	88	139	110	88	—	110	—	—	—	—	82	—	83	91	—	104	—	—	—	—	70	—	82	79	—	113	—	—	—	107 (5)	90 (4)	86 (4)
B49397	—	90	—	112	—	—	70	—	—	—	—	83	—	64	—	—	87	—	—	—	—	73	—	71	—	—	60	—	—	—	91 (3)	78 (3)	68 (3)
B5014	—	82	—	—	—	—	—	79	—	—	—	97	—	—	—	—	—	99	—	—	—	79	—	—	—	—	—	77	—	—	81 (2)	98 (2)	78 (2)
B5032	—	83	—	128	—	—	—	103	—	—	—	75	—	57	—	—	—	67	—	—	—	62	—	73	—	—	—	69	—	—	105 (3)	66 (3)	68 (3)
B5037	—	84	—	121	—	—	84	77	—	—	—	87	—	101	—	—	123	96	—	—	—	72	—	122	—	—	103	73	—	—	92 (4)	102 (4)	93 (4)
B5041	—	—	—	127	—	—	—	110	—	—	—	—	—	75	—	—	—	78	—	—	—	—	—	95	—	—	—	85	—	—	119 (2)	77 (2)	90 (2)
B5073	—	—	—	115	—	—	95	96	—	—	—	—	—	84	—	—	84	95	—	—	—	—	—	97	—	—	79	91	—	—	102 (3)	88 (3)	89 (3)
B50135	—	—	—	—	—	—	72	118	—	—	—	—	—	—	—	—	84	88	—	—	—	—	—	—	—	—	66	103	—	—	95 (2)	86 (2)	85 (2)
B50141	—	69	—	—	—	—	88	71	—	—	—	85	—	—	—	—	99	92	—	—	—	57	—	—	—	—	87	65	—	—	76 (3)	92 (3)	70 (3)
B50153	—	84	—	119	—	—	96	77	—	—	—	97	—	99	—	—	95	96	—	—	—	81	—	108	—	—	91	74	—	—	94 (4)	97 (4)	89 (4)
B50155	—	—	—	107	—	—	—	—	—	—	—	—	—	90	—	—	—	—	—	—	—	—	—	96	—	—	—	—	—	—	107 (1)	90 (1)	96 (1)
B50184	—	—	—	—	—	—	—	90	—	—	—	—	—	—	—	—	—	87	—	—	—	—	—	—	—	—	—	78	—	—	90 (1)	87 (1)	78 (1)
B50210	—	—	—	—	—	—	—	83	—	—	—	—	—	—	—	—	—	86	—	—	—	—	—	—	—	—	—	71	—	—	83 (1)	86 (1)	71 (1)
B50345	—	—	—	—	—	—	—	72	—	—	—	—	—	—	—	—	—	99	—	—	—	—	—	—	—	—	—	70	—	—	72 (1)	99 (1)	70 (1)
B50347	—	98	—	—	—	—	74	61	—	—	—	74	—	—	—	—	96	92	—	—	—	71	—	—	—	—	71	56	—	—	78 (3)	87 (3)	66 (3)
B50377	—	65	—	107	—	—	88	76	—	—	—	90	—	93	—	—	111	101	—	—	—	58	—	99	—	—	97	76	—	—	84 (4)	99 (4)	83 (4)
MAY 336	75	—	83	92	56	45	—	—	77	115	118	—	—	109	131	102	—	—	103	89	90	—	—	100	74	46	—	—	76	102	71 (6)	113 (5)	77 (5)
M112/34	—	73	104	113	—	55	90	—	71	99	—	77	—	82	—	83	97	—	94	108	—	55	—	93	—	44	58	—	64	114	84 (6)	97 (5)	69 (5)
M134/32	76	77	—	110	—	66	68	—	—	—	86	82	—	89	—	92	103	—	—	—	68	62	—	98	—	69	71	—	—	—	79 (5)	90 (5)	74 (5)
M213/40	—	—	113	113	—	79	50	—	—	—	—	—	—	85	—	96	70	—	—	—	—	—	—	74	—	77	35	—	—	—	89 (4)	77 (3)	62 (3)
Nco310	—	99	—	125	—	—	47	—	—	—	—	90	—	102	—	—	109	—	—	—	—	88	—	127	—	—	53	—	—	—	90 (3)	100 (3)	89 (3)
Nco330	—	80	—	—	—	—	—	—	—	—	—	97	—	—	—	—	—	—	—	—	—	76	—	—	—	—	—	—	—	—	80 (1)	97 (1)	76 (1)
POJ3016	—	—	—	59	—	—	53	—	—	—	—	—	—	98	—	—	98	—	—	—	—	—	—	58	—	—	52	—	—	—	56 (2)	98 (2)	55 (2)
PR1000	—	75	—	—	—	—	—	—	—	—	—	90	—	—	—	—	—	—	—	—	—	67	—	—	—	—	—	—	—	—	75 (1)	90 (1)	67 (1)
S.E. % g.m.	13·7	11·9	36·2	11·8	23·4	40·0	22·6	10·6	23·4	29·9	12·2	9·3	—	—	11·7	11·9	16·9	7·8	11·0	14·6	16·6	15·1	—	—	29·5	40·1	26·9	14·2	23·0	37·7			
Sig. Diff.	15·8	16·5	49·1	14·9	18·3	36·7	30·2	15·5	25·3	—	14·5	7·8	—	—	13·5	15·0	—	11·6	13·7	—	17·6	18·1	—	—	19·2	36·2	35·0	18·4	20·7	—			

1. Appleton—Appleton—Wash House.
2. Frome—Mint—Mt. Eagle—Hill Piece.
3. Gray's Inn—Fort Stewart—Lagoon.
4. Jamaica Sugar Estates—Golden Grove 27.
5. Long Pond—Steelfield—Somers.
6. Monymusk—Morelands—Amity.
7. Richmond/Llandovery—Llandovery—Store House.
8. Worthy Park—Lime Kiln 1.
9. Worthy Park—Banana Walk 1 (a) Plants. (b) 1st. Ratoons.

Figures in brackets denote number of experiments from which averages were obtained.
† Temporary Jamaican identification.
* Permanent "B" numbers.

PART 4

VARIETY X CULTIVATION

(i) Variety x Spacing Experiments

1. Appleton—Raheen—Lane 5

	Cane								
	A	B	C	D	E	F	Close spacing	Wide spacing	Mean
B37161	43·6	103	78	101	92	93	41·2	100	41·2
B41227	118	113	103	113	114	114	119	119	119
B4362	89	90	85	89	86	89	90	95	93
Close spacing	44·9	96	86	98	96	95	—	—	—
Wide spacing	99	103	86	98	94	97	—	—	—
Mean	44·7	103	90	102	99	100	42·6	101	—

	S.E. % g.m.	Sig. Diff.
Drains	17·7	—
Varieties	15·0	6·5
Spacing	11·6	—

A = Ridging with 12′ drain centres
B = " " 18′ " "
C = " " 24′ " "
D = Cambering 12′ " "
E = " " 18′ " "
F = " " 24′ " "
Close spacing = 4′ or 4′ 6″ between rows.
Wide " = 6′ between rows

2. Frome—Masemure—Charlottenburgh—Logwood Gutter

	Cane				Sucrose				Sugar			
	Setts per acre				Setts per acre				Setts per acre			
	5000	7000	9000	Mean	5000	7000	9000	Mean	5000	7000	9000	Mean
Spring Plants												
B41227	52·7	100	101	52·7	13·2	101	97	13·3	7·0	98	103	7·0
B42231	79	88	91	86	95	99	94	104	83	89	97	89
B4362	93	84	83	89	91	89	91	110	102	94	92	95
Mean	47·8	100	101	—	13·8	101	98	—	6·6	99	102	—
S.E. % g.m. ..		7·9				4·8				10·1		
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
Sig. Diff.		7·2	—			4·6	—			9·6	—	
1st Ratoons												
B41227	34·9	103	110	36·3	14·8	99	102	14·9	5·2	102	112	5·4
B42231	82	87	100	86	97	94	99	96	79	82	99	85
B4362	88	96	100	91	112	111	110	110	98	107	110	100
Mean	31·3	106	115	—	15·2	99	101	—	4·8	105	110	—
S.E. % g.m.		10·4				1·5				11·3		
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
Sig. Diff.		9·6	11·1			0·7	0·7			10·7	12·1	

3. Frome—Shrewsbury—Shrewsbury—Meylersfield Piece

	Cane				Sucrose				Sugar			
	Setts per acre				Setts per acre				Setts per acre			
	5000	7000	9000	Mean	5000	7000	9000	Mean	5000	7000	9000	Mean
Spring Plants												
B41227	64·3	97	107	65·1	7·7	94	79	8·4	5·3	97	126	5·7
B42231	75	90	90	84	77	72	75	122	92	115	110	98
B4362	73	79	79	76	83	94	88	103	82	78	84	76
Mean	53·2	107	111	—	89	100	93	—	4·9	106	117	—
S.E. % g.m. ..		8·7				11·6				10·9		
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
Sig. Diff.		7·6	9·3			10·7	—			9·9	11·7	
1st Ratoons												
B41227	53·8	87	98	51·2	11·6	89	101	11·2	6·3	78	100	5·8
B42231	77	85	84	86	110	114	106	114	84	96	89	97
B4362	70	80	80	81	129	124	125	131	90	99	100	104
Mean	44·2	102	106	—	13·0	105	102	—	5·7	100	105	—
S.E. % g.m. ..		9·2				6·3				12·7		
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
Sig. Diff.		9·5	—			4·5	—			—	—	

4. Grays Inn—Gibraltar—Section 11

	Cane				Sucrose				Sugar			
	A	B	C	Mean	A	B	C	Mean	A	B	C	Mean
Spring Plants												
B3439	36·4	99	97	35·9	12·1	108	103	12·6	4·4	105	99	4·5
B37172	103	92	109	103	101	100	102	98	103	92	110	100
B4362	123	121	120	123	106	104	115	104	130	126	137	129
Mean	39·6	96	100	—	12·4	101	104	—	4·9	97	104	—
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
S.E. % g.m. ..		17·1	23·2			11·0	8·2			19·3	25·5	
Sig. Diff.		15·6	—			—	—			17·8	—	

A = 5′ rows 6 rows per bed
B = 4′ 3″ " 7 rows per bed
C = 3′ 4″ " 9 rows per bed

5. Monymusk—Bog—Triangle 1

	Cane				Sucrose				Sugar			
	Setts per acre				Setts per acre				Setts per acre			
	5000	8000	Long tops	Mean	5000	8000	Long tops	Mean	5000	8000	Long tops	Mean
Spring Plants												
B41227	75·2	103	113	79·1	7·3	109	88	7·2	5·5	103	91	5·7
B42231	78	88	85	80	101	104	102	103	73	86	79	83
B4362	77	94	86	81	94	107	102	102	66	92	80	83
MY3	82	96	82	82	—	—	—	—	—	—	—	—
Mean	68·3	113	109	—	7·2	109	99	—	4·6	12·2	109	—
S.E. % g.m. ..		12·3				14·2				19·7		
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
Sig. Diff.		10·3	—			—	—			—	—	
1st Ratoons												
B41227	46·5	106	111	49·0	8·0	109	95	8·1	3·7	116	105	3·9
B42231	88	92	85	84	122	110	124	117	105	100	108	100
B4362	91	86	71	78	105	117	108	109	95	100	76	85
MY3	60	58	72	60	129	111	118	118	78	65	84	72
Mean	39·4	101	100	—	9·1	98	98	—	3·5	100	100	—
2nd Ratoons												
B41227	32·4	103	108	33·6	6·5	110	88	6·5	2·1	113	96	2·2
B42231	72	84	94	80	101	113	112	109	73	94	104	88
B4362	96	111	108	101	108	116	118	115	102	129	127	116
MY3	66	74	83	71	103	90	103	99	67	67	86	71
Mean	27·0	112	118	—	6·7	104	102	—	1·8	118	121	—
S.E. % g.m. ..		14·9				8·6				17·5		
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
Sig. Diff.		12·8	13·7			8·9	—			16·0	15·4	

6. Monymusk—Morelands—Hillside—Calabash Bay

	Cane				Sucrose				Sugar			
	A	B	C	Mean	A	B	C	Mean	A	B	C	Mean
Spring Plants												
B41227	45·8	92	96	43·9	10·2	96	97	10·0	4·7	87	82	4·4
B42231	82	79	83	85	114	116	110	116	92	90	91	98
B4362	93	98	96	100	104	94	101	102	96	91	97	102
Mean	42·1	97	98	—	108	97	97	—	4·5	93	97	—
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
S.E. % g.m. ..		8·5	12·6			7·6	2·5			11·7	17·5	
Sig. Diff.		6·1	—			5·9	1·0			—	—	

A = 3′ 6″ row widths
B = 4′ 6″ " "
C = 5′ 6″ " "

7. Rose Hall—Hibbert. Section 1

	Cane				Sucrose				Sugar			
	3′	4′	5′	Mean	3′	4′	5′	Mean	3′	4′	5′	Mean
Spring Plants												
B3439	35·4	102	76	32·9								
B37161	85	123	86	106								
B41227	129	125	101	128		No juice figures				No juice figures		
Mean	37·2	111	83	—								
		Variety	Spacing									
S.E. % g.m. ..		12·6	16·3									
Sig. Diff.		12·0	13·7									

3′ = 9 rows per plot
4′ = 7 " " "
5′ = 6 " " "

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8. Vale Royal—Swanswick—Parris I

	Cane			
	B41227	B4362	Co331	Mean
Spring Plants				
4′ banks ..	32·9	85	112	32·5
3′ banks ..	108	93	119	108
Mean	34·4	86	111	—
		Variety	Spacing	
S.E. % g.m. ..		8·2	7·2	
Sig. Diff.		5·2	4·4	

1st Ratoons	Cane				Sucrose				Sugar			
	B41227	B4362	Co331	Mean	B41227	B4362	Co331	Mean	B41227	B4362	Co331	Mean
4′ banks ..	27·9	87	111	27·8	13·4	120	96	14·2	3·7	105	107	3·9
3′ banks ..	100	92	114	103	102	118	96	100	102	110	109	103
Mean	27·9	90	113	—	13·6	118	95	—	3·8	106	107	—
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
S.E. % g.m. ..		13·5	9·5			8·0	5·6			17·0	13·5	
Sig. Diff.		6·2	—			3·8	—			—	—	

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9. Vale Royal—Swanswick—Joe Piece 1

	Cane					Sucrose		Sugar	
	A	B	C	D	Mean				
Spring Plants									
Co331	33·1	108	100	97	33·4				
B41227	100	104	99	93	98				
B4362	83	87	84	101	88	No juice figures		No juice figures	
Mean	31·3	105	100	92	—				
			Variety	Spacing					
S.E. % g.m. ..			7·3	9·1					
Sig. Diff.			6·0	—					

A = standard practice 4′ rows with drains 20′ apart
B = 4′ rows with 20′ apart drains
C = 4′ rows on 20′ cambered beds
D = 6′ rows Louisiana banks 2 rows placed 2′ apart on each bank

(ii) Variety x Moulding Experiments

1. Frome—Masemure—Retrieve—Dago 1

Spring Plants	Cane			% Sucrose			Sugar		
	M_0	M_1	Mean	M_0	M_1	Mean	M_0	M_1	Mean
B41227	33·2	99	33·1	14·6	102	14·7	4·9	101	4·9
B42231	76	85	81	95	97	95	72	83	77
B4362	105	114	110	108	106	106	112	120	116
S.E. % g.m. ..		10·3			4·4			10·6	
Sig. Diff.		10·3			3·8			8·8	

2. Frome—Barham—Starapple—Morass

Spring Plants	Cane			% Sucrose			Sugar		
	M_0	M_1	Mean	M_0	M_1	Mean	M_0	M_1	Mean
B41227	18·3	96	17·9	13·9	98	13·8	2·6	94	2·5
B42231	100	95	99	104	101	104	104	99	104
B4362	108	111	112	110	110	112	116	123	123
S.E. % g.m. ..		10·3			4·3			9·7	
Sig. Diff.		9·2			3·7			8·5	

M_0 = Breaking banks in 1 operation
M_1 = " " " 3 weedings—normal practice

(iii) Variety x Booting Experiments

1. Frome—Masemure—Plantain Walk

Spring Plants	Cane			% Sucrose			Sugar		
	B_0	B_1	Mean	B_0	B_1	Mean	B_0	B_1	Mean
B41227	37·6	114	40·3	14·8	96	14·5	5·6	109	5·8
B42231	80	79	74	101	96	101	81	75	75
B4362	121	124	115	100	105	104	121	130	120
		Variety	Booting		Variety	Booting		Variety	Booting
S.E. % g.m. ..		27·0	11·3		4·7	4·2		25·3	11·1
Sig. Diff.		26·8	—		4·8	—		25·6	—

2. Frome—Mint—Mt. Eagle—Mt. Eagle Garden

Spring Plants	Cane			% Sucrose			Sugar		
	B_0	B_1	Mean	B_0	B_1	Mean	B_0	B_1	Mean
B41227	33·4	121	36·9	14·1	93	13·6	4·7	110	5·0
B42231	84	72	71	98	99	103	83	71	73
B4362	123	114	107	107	106	111	131	120	119
		Variety	Booting		Variety	Booting		Variety	Booting
S.E. % g.m. ..		13·8	12·8		8·1	5·5		7·8	12·6
Sig. Diff.		13·2	—		8·0	—		7·8	—

3. Serge Island—Hall Head—Cooper Shop

Spring Plants	Cane			% Sucrose			Sugar		
	B_0	B_1	Mean	B_0	B_1	Mean	B_0	B_1	Mean
B3439	46·9	95	45·8						
B41227	100	109	107						
B4362	111	104	111	No juice figures			No juice figures		
		Variety	Booting						
S.E. % g.m. ..		13·5	16·2						
Sig. Diff.		—	—						

PART 5

CULTIVATION EXPERIMENTS

1. Appleton—Raheen—Big Grass 5 (B34104)

Spring Plants	A	B	C	D	S.E. % g.m.	Sig. Diff.
Cane	100	114	101	71	3·1	6·0
Sucrose	100	104	103	104	4·1	8·1
Sugar	100	118	104	61	4·2	8·0
1st Ratoons						
Cane	100	104	103	92	8·7	—
% Pol	100	103	100	113	12·1	—
Pol	100	106	103	104	13·7	—
2nd Ratoons						
Cane	100	137	103	93	13·2	12·4
% Pol	100	101	89	101	7·1	—
Pol	100	137	93	93	9·0	8·3

A = 24′ beds with 5 rows 5′ apart planted straight
B = 12′ " " 2 " 6′ " " staggered
C = 24′ " " 4 " 6′ " " staggered
D = 48′ " " 8 " 6′ " " straight

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2. Caymanas — L and K Piece (B4362)

1st Ratoons	K_0	K_1	T_0	T_1	F_0	F_1	S.E. % gm.	Sig. Diff.
Cane	46·7	101	48·1	95	46·6	103	11·2	—
Sucrose	11·8	103	12·1	100	12·2	99	6·6	—
Sugar	5·5	104	5·8	95	5·7	99	8·2	—

K_0 = No knifing. T_0 = No trash rowing. F_0 = No furrowing
K_1 = knifing. T_1 = trash rowing. F_1 = furrowing.

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3. Caymanas—Sections 5A and 5B

1st Ratoons	A	B	C	S.E. % g.m.	Sig. Diff.
Cane	20·8	101	101	9·4	—
Sucrose	11·8	99	104	7·4	—
Sugar	2·4	100	106	12·1	—

A = No mechanical cultivation
B = Inter-row knifing
C = Cattle ploughing

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4. Frome—Blue Castle—Guthrie Pen 3 (B41227)

Spring Plants	A	B	C	D	E	S.E. % g.m.	Sig. Diff.
Cane	30·8	94	90	100	89	7·2	—
Sucrose	12·7	99	97	104	102	4·2	—
Sugar	3·9	94	88	104	91	10·1	—

A = Control
B = Trash turned and no forking
C = Alternate rows forked and trash replaced
D = Alternate rows forked and trash not replaced
E = Every row forked

5. Frome—Shrewsbury—Cornwall—Negro Ground (B4362)

Spring Plants	A	B	C	D	E	S.E. % g.m.	Sig. Diff.
Cane	41·5	101	102	103	101	6·1	—
Sucrose	14·4	105	102	105	105	4·3	—
Sugar	6·0	105	104	108	106	6·4	—

A = Control
B = Trash turned and no forking
C = Alternate rows forked and trash replaced
D = Alternate rows forked and trash not replaced
E = Every row forked

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6. Innswood—St. Helens—9c (B34104)

Fall Plants	A	B	C	D	S.E. % g.m.	Sig. Diff.
Cane	25·5	101	105	102	5·6	—

A = Standard practise irrigating every row
B = 10′ banks with 2 cane rows on each bank
C = Irrigating every other furrow with drains 10′ apart
D = " " " " " " 20′ "

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7. Richmond/Llandovery—Richmond—Cotton Tree 3 (B41227)

Plants	A	B	C	D	E	F	G	H	No extra S/A	Extra S/A	S.E. % g.m.	Sig. Diff.
Cane	36·8	94	97	104	117	112	104	99	38·4	98	13·5	—
Sucrose	12·4	107	95	94	98	92	94	100	12·2	100	8·3	—
Sugar	4·6	100	92	97	114	100	93	99	4·1	98	13·4	—

A = ½ chain cambered beds 4 rows
B = ⅓ " " " 6 "
C = Louisiana banks 1 row bank
D = " " 2 " "
E = Richmond method 3′ banks
F = " " 5′ "
G = Flat and contour drains 3′ rows
H = " " " " 5′ "
(Extra S/A was applied to ½ of each plot)

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8. Serge Island—Serge—April

Plants	Shallow furrow	Deep furrow	S.E. % g.m.	Sig. Diff.
Cane	41·96	104	11·4	—

APPENDIX III

PART 1

FACTORY DATA COMPARED BY CROPS

TABLE I

JUICE QUALITY. CROPS 1951–55

	1951	1952	1953	1954	1955
Cane Pol %	12·72	12·41	12·18	11·94	12·83
Absolute Juice—°Brix	17·99	17·70	17·29	17·02	18·14
Purity	82·91	81·93	81·79	81·61	82·73

TABLE II

MILLING FIGURES. CROPS 1951–55

	1951	1952	1953	1954	1955
Tons cane per hour (TCH)	45·12	48·44	52·75	56·23	59·56
Tons fibre per hour (TFH)	6·65	6·99	7·55	7·89	8·64
Imbibition % Fibre	133·87	147·07	134·05	139·59	134·11
Reduced Pol Extraction	95·22	95·29	95·24	94·88	95·21
Absolute Juice lost % Fibre (pol basis)	33·49	32·94	33·35	35·86	33·52
Pol % Bagasse	2·51	2·40	2·38	2·33	2·47

TABLE III

LIME CONSUMPTION IN JAMAICAN FACTORIES. CROPS 1951–55

	Lbs. C_aO/Ton Cane					Lbs. C_aO/Ton Non-pol				
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
†Monymusk	7·86*	6·17	4·22	2·95	2·99	301·6*	223·8	148·9	104·2	102·7
Richmond/Llandovery	—	1·16	1·22	1·49	1·78	—	46·4	46·9	60·6	75·0
Jamaica Sugar Estates	1·26	1·20	1·41	1·18	1·30	59·2	50·3	57·7	50·1	60·0
Frome	1·16	1·16	0·95	1·04	1·12	46·9	37·1	38·3	41·2	46·8
New Yarmouth	1·50	1·96	2·09	1·51	1·52	63·5	79·9	80·2	55·7	58·7
Caymanas	0·92	1·37	1·12	1·36	1·07	41·6	57·2	44·8	54·7	44·1
Innswood	1·03	1·39	1·17	0·98	0·98	42·7	55·5	44·1	38·2	44·5
Barnett	1·15	1·45	1·17	1·21	1·04	48·3	64·1	52·8	53·8	49·0
Worthy Park	—	0·88	1·10	1·46	0·93	—	47·6	59·0	79·3	49·5
Rose Hall	1·11	1·02	1·11	0·95	0·92	45·9	45·3	49·3	41·9	36·5
Green Park	—	1·21	1·08	—	—	—	55·3	42·6	—	—
Gray's Inn Central	1·31	1·07	1·17	1·62	1·51	51·2	42·6	46·3	62·1	59·2
Sevens	0·90	1·54	0·97	1·04	0·92	39·2	66·1	43·4	44·8	38·6
United Estates	1·51	1·12	1·40	1·28	1·29	62·4	48·7	62·6	56·2	58·8
Serge Island	1·59	1·42	1·35	1·28	1·35	60·8	57·5	51·4	54·7	60·9
Vale Royal	1·17	1·11	0·60	0·93	1·21	48·7	51·1	28·0	47·6	56·9
Appleton	1·06	0·76	0·95	0·97	0·78	—	35·7	47·3	43·2	40·5
Hampden	1·44	1·47	1·11	0·99	1·11	61·8	63·6	48·2	44·0	47·0
Bernard Lodge	1·76	1·51	1·53	1·55	1·72	76·3	64·6	63·6	69·7	71·9
Holland	—	—	1·21	1·25	1·53	—	—	49·1	49·1	60·8
Long Pond	0·91	1·01	1·91	1·34	1·47	41·9	55·5	86·2	65·5	45·1

*Includes Refinery Consumption. †New Factory in 1949.

TABLE IV

HEATER CAPACITIES. JAMAICAN FACTORIES. CROPS 1951–55

Factory	Cu. ft. M.Jc./Sq. ft. H.S./Hr.				
	1951	1952	1953	1954	1955
Monymusk	0·92	0·92	0·94	0·97	1·00
Richmond/Llandovery	0·70	0·95	1·16	1·35	1·31
Jamaica Sugar Estates	1·09	1·11	1·14	1·15	1·22
Frome	1·07	1·09	1·07	1·00	0·79
New Yarmouth	0·72	1·14	1·15	0·77	1·17
Caymanas	0·96	0·99	0·91	0·90	0·94
Innswood	0·97	1·02	1·03	1·11	1·20
Barnett	0·60	0·73	0·77	0·79	0·83
Worthy Park	0·84	0·86	1·01	1·07	1·03
Rose Hall	0·61	0·61	0·60	0·66	0·50
Green Park	0·31	0·36	0·36	0·27	—
Gray's Inn Central	0·96	1·03	1·04	1·03	1·03
Sevens	0·59	0·72	0·82	0·98	0·98
United Estates	1·09	1·15	1·24	0·74	0·82
Serge Island	0·85	0·85	1·03	1·09	1·08
Vale Royal	0·94	0·95	0·99	1·03	1·21
Appleton	—	0·56	0·66	0·77	0·83
Hampden	0·66	—	0·65	0·73	0·78
Bernard Lodge	0·74	—	0·94	0·95	0·91
Holland	0·62	0·64	0·72	0·61	0·65
Long Pond	0·52	0·51	0·55	0·72	0·68

TABLE V

ROTARY FILTER PERFORMANCE, CROPS 1951–55

Factory	Sq. ft. FA/TCH					Pol in Cake % Pol in Cane				
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
Monymusk	4·20	4·10	3·96	3·82	3·69	0·32	0·43	0·45	0·49	0·43
Richmond/Llandovery	—	—	—	—	—	—	—	—	—	0·49
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	—	0·48
Frome	3·49	3·43	3·36	2·63	3·81	0·21	0·20	0·24	0·26	0·22
New Yarmouth	5·06	4·99	4·91	4·94	4·78	0·41	0·46	0·67	0·38	0·45
Caymanas	4·25	5·97	5·59	5·47	5·35	0·52	0·32	0·40	0·54	0·33
Innswood	4·94	4·79	4·53	3·98	3·66	0·22	0·27	0·26	0·24	0·35
Barnett	—	—	—	5·82	5·34	—	—	—	0·27	0·35
Worthy Park	—	—	—	—	—	—	—	—	—	0·30
Rose Hall	—	—	—	—	—	—	—	—	—	0·53
Green Park	—	—	—	—	—	—	—	—	—	—
Gray's Inn Central	—	—	—	6·35	6·29	—	—	—	0·62	0·63
Sevens	—	—	—	3·45	3·26	—	—	—	0·27	0·34
United Estates	—	4·12	3·70	3·70	3·55	—	0·32	0·26	0·41	0·33
Serge Island	—	—	—	—	7·55	—	—	—	—	0·79
Vale Royal	—	—	—	7·70	6·37	—	—	—	0·62	0·62
Appleton	6·03	6·00	5·04	4·31	3·84	—	0·56	0·48	0·23	0·13
Hampden	—	—	—	—	6·06	—	—	—	—	0·40
Bernard Lodge	6·13	6·00	5·59	5·34	5·53	0·37	0·40	0·32	0·37	0·42
Holland	—	—	—	—	—	—	—	—	—	0·57
Long Pond	—	—	—	—	—	—	—	—	—	0·54

TABLE VI

FILTER STATION CONTROL FIGURES. CROPS 1951–55

	1951	1952	1953	1954	1955
Pol % Cake	2·58	2·33	2·40	2·02	1·84
Cake % Cane	2·17	2·28	2·29	2·29	2·43
Pol in Cake % Pol in Cane	0·44	0·43	0·45	0·39	0·35

TABLE VII

EVAPORATION RATES (AS LBS. EVAP./SQ. FT. H.S./HR.). CROPS 1951–55

Factory	°Brix Syrup					Lbs./Sq. ft. H.S./Hr.				
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
Monymusk	58·00	58·85	58·67	54·67	54·92	8·33	9·80	8·67	8·67	7·17
Richmond/Llandovery ..	53·92	57·72	66·76	62·35	60·45	9·12	4·18	6·51	7·52	8·09
Jamaica Sugar Estates ..	61·65	59·04	57·81	57·56	56·59	6·41	7·27	6·54	6·62	5·67
Frome	45·25	51·33	48·99	57·97	59·89	9·35	10·81	9·83	7·98	7·94
New Yarmouth	62·66	62·96	63·60	66·11	63·42	7·00	6·50	7·57	7·68	7·62
Caymanas	56·39	58·54	57·77	54·75	62·12	6·76	6·58	4·77	4·63	5·02
Innswood	58·21	52·82	53·90	58·36	57·37	5·69	6·95	5·84	6·52	6·84
Barnett	56·18	62·15	58·51	57·53	59·13	5·34	7·61	7·08	7·35	7·53
Worthy Park	61·78	62·46	62·79	61·74	62·08	4·79	5·58	5·79	6·14	5·75
Rose Hall	65·00	65·39	60·96	59·99	63·37	6·89	7·73	6·66	8·02	8·01
Green Park	58·67	60·38	59·17	54·71	—	4·69	6·38	5·48	5·35	—
Gray's Inn Central ..	56·44	57·48	59·45	53·03	54·83	5·44	6·86	6·02	5·74	5·66
Sevens	63·46	61·33	61·64	64·32	64·78	4·63	6·35	6·38	6·75	6·63
United Estates	65·38	66·00	60·86	64·59	65·24	8·07	9·49	9·06	9·42	6·30
Serge Island	59·60	59·31	55·16	48·88	54·30	7·31	8·97	8·94	9·20	9·02
Vale Royal	56·82	59·08	58·36	60·64	61·28	7·84	9·20	8·34	8·89	10·35
Appleton	53·47	57·42	58·12	46·64	48·82	—	6·14	6·33	6·91	7·34
Hampden	50·38	61·54	57·70	59·40	59·96	3·77	5·25	6·04	7·18	7·27
Bernard Lodge	58·99	61·45	60·83	61·43	61·91	6·25	5·63	5·36	5·40	5·08
Holland	57·36	61·24	52·35	57·72	60·35	5·29	5·21	4·93	4·84	5·02
Long Pond	52·45	51·90	51·19	52·42	58·95	6·43	7·62	6·89	7·90	8·90

TABLE VIII

Polarizations, Moistures, Safety Factors and Permissible Moistures—Export Sugar. Crops 1951–55

Factory	°Polarisation					% Moisture				
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
Monymusk	95·87	95·75	96·01	96·59	96·49	0·95	0·94	1·10	1·14	0·96
Richmond/Llandovery	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	—	—
Frome	96·07	96·10	95·96	96·23	96·57	1·07	1·08	1·07	1·07	0·94
New Yarmouth	97·49	97·44	97·42	97·32	97·68	0·67	0·59	0·61	—	0·58
Caymanas	97·49	97·22	97·50	97·57	97·21	0·67	—	—	—	—
Innswood	97·26	96·95	97·01	97·01	97·28	0·99	0·96	0·96	0·99	0·90
Barnett	96·46	97·61	96·62	97·48	97·09	0·96	0·97	0·99	1·00	0·99
Worthy Park	97·64	97·51	97·09	96·92	97·21	—	1·00	1·03	1·05	1·03
Rose Hall	—	—	96·72	97·28	97·09	—	—	0·86	0·83	0·85
Green Park	—	—	—	—	—	—	0·81	—	—	—
Gray's Inn Central	96·51	96·52	96·43	96·57	97·15	0·89	0·89	1·05	1·00	0·81
Sevens	96·50	96·61	96·45	96·54	97·10	—	—	—	0·73	0·68
United Estates	97·49	97·05	97·10	97·02	97·05	0·90	0·90	0·86	0·85	0·89
Serge Island	96·70	96·38	96·67	96·88	96·86	0·87	0·94	0·89	0·83	0·92
Vale Royal	—	—	—	—	—	—	0·68	0·72	—	—
Appleton	—	97·85	97·56	97·18	97·42	—	0·93	0·94	0·86	0·87
Hampden	—	97·17	97·42	97·96	98·10	—	0·87	0·88	0·87	0·87
Bernard Lodge	96·99	97·25	97·17	—	97·45	—	—	—	—	0·90
Holland	97·04	96·76	96·67	96·94	96·51	—	—	—	0·83	0·91
Long Pond	—	—	—	97·57	—	—	0·73	—	—	—

Factory	Safety Factor					Permissible % Moisture				
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
Monymusk	0·230	0·221	0·276	0·334	0·274	1·03	1·06	1·00	0·85	0·88
Richmond/Llandovery	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	—	—
Frome	0·272	0·277	0·265	0·284	0·274	0·98	0·98	1·01	0·94	0·86
New Yarmouth	0·267	0·230	0·170	—	0·250	0·63	0·64	0·65	0·67	0·58
Caymanas	0·267	—	—	—	—	0·63	0·70	0·63	0·61	0·70
Innswood	0·361	0·315	0·321	0·331	0·331	0·69	0·76	0·75	0·75	0·68
Barnett	0·271	0·406	0·293	0·397	0·340	0·89	0·60	0·85	0·63	0·73
Worthy Park	—	0·402	0·354	0·341	0·369	0·59	0·62	0·73	0·77	0·70
Rose Hall	—	—	0·262	0·305	0·292	—	—	0·82	0·68	0·73
Green Park	—	—	—	—	—	—	—	—	—	—
Gray's Inn Central	0·255	0·256	0·294	0·292	0·284	0·87	0·87	0·89	0·86	0·71
Sevens	—	—	—	0·211	0·234	0·88	0·85	0·89	0·87	0·73
United Estates	0·359	0·305	0·297	0·285	0·302	0·63	0·74	0·73	0·75	0·74
Serge Island	0·264	0·260	0·267	0·266	0·293	0·83	0·91	0·83	0·78	0·79
Vale Royal	—	—	—	—	—	—	—	—	—	—
Appleton	—	0·432	0·385	0·305	0·337	—	0·54	0·61	0·71	0·65
Hampden	—	0·307	0·341	0·426	0·456	—	0·71	0·65	0·51	0·48
Bernard Lodge	—	—	—	—	0·353	0·75	0·69	0·71	—	0·64
Holland	—	—	—	0·271	0·261	0·74	0·81	0·83	0·77	0·87
Long Pond	—	—	—	—	—	—	—	—	0·61	—

TABLE IX

Per cent. Gross Grinding Time. Crops 1951–55

	1951	1952	1953	1954	1955
Non-Factory Stoppages	17·38	15·05	16·47	15·11	14·81
Factory Stoppages	9·37	7·80	7·85	7·72	7·20
Time Grinding	73·25	77·15	75·68	77·17	77·99

TABLE X

Pol Balance (% Pol in Cane). Crops 1951–55

	1951	1952	1953	1954	1955
Pol in Sugars	84·54	84·44	84·11	84·33	84·48
Pol in Bagasse	5·74	5·53	5·57	5·53	5·69
Pol in Molasses	7·38	7·89	8·33	8·23	7·97
Pol in Filter Cake	0·68	0·42	0·45	0·39	0·35
Pol in Undertermined	1·66	1·72	1·54	1·52	1·51

TABLE XI

COMPARATIVE CONTROL FIGURES, CROPS 1951–55

	1951	1952	1953	1954	1955
Pol % Cane	12·72	12·41	12·18	11·94	12·83
Mixed Juice—Purity	83·28	82·56	82·21	82·02	83·17
Tons Cane/Ton 96° Sugar	8·93	9·16	9·37	9·53	8·86
Boiling House Efficiency	97·49	97·62	97·51	97·85	97·46
Pol in Sugars % Pol in Cane	85·90	84·42	84·11	84·33	—
Pol in Molasses % Pol in Cane	7·77	7·63	8·20	8·23	—

TABLE XII

MOLASSES FACTORS. CROPS 1951–55

Factory	1951	1952	1953	1954	1955
Monymusk	42·79	45·06	46·72	44·62	45·25
Richmond/Llandovery	34·30	35·02	37·05	38·26	40·57
Jamaica Sugar Estates	39·67	40·40	42·33	38·91	38·89
Frome	32·04	33·57	35·32	33·98	37·76
New Yarmouth	39·93	39·26	38·34	38·10	38·78
Caymanas	36·86	36·98	39·72	39·65	40·15
Innswood	42·22	42·89	45·24	47·32	57·14
Barnett	43·53	39·73	42·73	42·62	44·81
Worthy Park	39·76	35·92	31·90	41·69	45·20
Rose Hall	44·02	44·57	48·13	52·45	44·45
Green Park	—	—	—	—	—
Gray's Inn Central	40·78	39·49	37·31	39·03	42·62
Sevens	41·48	39·50	41·37	39·86	36·78
United Estates	37·88	38·14	38·35	38·31	36·77
Serge Island	37·60	40·23	37·62	35·62	38·99
Vale Royal	29·61	34·78	35·25	39·72	38·06
Appleton	—	46·41	33·63	29·67	30·12
Hampden	—	—	38·12	42·87	46·91
Bernard Lodge	43·79	41·22	43·66	45·44	43·24
Holland	—	50·21	46·71	37·02	40·11
Long Pond	38·43	36·92	37·98	38·77	27·06

TABLE XIII

QUALITY OF CANE SUPPLIED TO JAMAICAN FACTORIES, EXPRESSED AS POSSIBLE TONS CANE/TON 96° SUGAR

(Calculated on a basis of assumed Mill Extraction of 96·50, a B.H.E. (Winter Carp) of 100 and Pol % Cane and Purity of Mixed Juice as reported.)

(Calculated on Copp's Tables—Spencer Meade, page 762.)

Factory	1951	1952	1953	1954	1955	5-Year averages
Monymusk	8·70	8·43	9·12	8·98	9·08	8·86
Richmond/Llandovery	—	9·25	8·36	8·98	8·62	8·80
Jamaica Sugar Estates	8·21	9·22	9·77	9·61	8·34	9·03
Frome	8·16	8·53	9·03	9·32	8·04	8·62
New Yarmouth	8·46	8·66	8·62	8·79	8·26	8·56
Caymanas	8·54	8·73	8·64	8·83	8·30	8·61
Innswood	8·29	9·03	8·80	9·09	8·01	8·64
Barnett	7·82	7·80	8·66	9·04	8·05	8·27
Worthy Park	7·75	7·27	7·27	7·42	6·89	7·32
Rose Hall	7·36	7·43	7·56	8·35	8·10	7·76
Green Park	8·50	7·95	8·73	9·77	—	—
Gray's Inn Central	9·44	10·76	9·84	10·18	9·29	9·90
Sevens	8·66	8·85	8·54	8·66	8·36	8·61
United Estates	7·78	7·93	8·44	8·76	7·88	8·16
Serge Island	7·63	7·79	8·20	8·51	7·78	7·98
Vale Royal	8·68	8·41	8·72	8·94	8·53	8·66
Appleton	8·24	7·52	7·98	8·90	7·85	8·10
Hampden	8·76	8·24	8·77	9·26	8·19	8·64
Bernard Lodge	8·64	8·83	8·69	8·59	8·12	8·57
Holland	8·18	8·90	8·85	9·97	8·11	8·80
Long Pond	8·68	8·09	9·07	9·49	8·64	8·79
Island Averages	8·40	8·65	8·83	9·02	8·33	8·65

FACTORY DATA 1955 CROP

TABLE I

Factory Equipment Data

Factories	Width Carrier	Knives			Crusher and Mills	Total Rolls	Remarks
		Setts	Blades/Setts	H.P.			
Monymusk	78″	2	38/38	200/200	3 RC 35¼″ × 78″, 15 RM 35″ × 78″	18	New equipment installed and used during 1955 crop. 5th tray to Dorr clarifier and additional evaporator 1st vessel. For 1956 crop: equipment and storage facilities for bulk sugar.
Richmond/Llandovery ..	41″	1	22	40	6 RM 22″ × 42″, 12 RM 24″ × 42″	18	Same as 1954 crop.
Jamaica Sugar Estates ..	60″	2	30/30	90/150	2–2 RC 30″ × 60″, 12 RM 30″ × 60″	16	New equipment installed and used during 1955 crop: 1222 sq. ft. H. S. Hamill pan 34 tons striking capacity. 2 new calandrias 4500 sq. ft. H.S. each for evaporator. 2 new centrifugals 42″ × 24″—750/1500 r.p.m. For 1956 crop: 1 set heavy duty cane knives 580 r.p.m. 30 blades, 1 bagasse baling press, mechanical lubrication of all mills. 1 pH meter for clarification, 1 Panohmer.
Frome	78″	2	38/38	300/200	3 RC 35¼″ × 78″, 12 RM 35″ × 78″	15	Same as 1954 crop.
New Yarmouth	52″	2	26/36	150/140	3 RC 28¼″ × 54″, 12 RM 26″ × 54″	15	New equipment installed and used during 1955 crop: Tecalemit lubrication fitted to mills. Anepro No. 11 grease used. 800 KW. turbo-generator for irrigation power. For 1956 crop: double crab cane gantry. Extension to auxiliary cane carrier.
Caymanas	48″	1	32	110	3 RC 24″ × 48″, 12 RM 24″ × 48″	15	Same as 1954 crop.
Innswood	42″	1	24	75	3 RC 24″ × 42″, 12 RM 24″ × 42″	15	New equipment installed and used during 1955 crop: 1½ ton Maxwell-Bolougne juice scale. New tri-drum boiler with Ward furnace. New 400 cu. ft. Fletcher centre flow vacuum pan. All gave exceptional performance. For 1956 crop: addition of an extra tray to Dorr 16′ clarifier. 4–650 cu. ft. crystallizers with Blanchard cooling element.
Barnett	40″	1	44	120	3 RC 23″ × 36″, 12 RM 22″ × 36″	15	For 1956 crop: additional set of 24 cane knives.
Worthy Park	42″	1	24	45	3 RC 22½″ × 42″, 3 RM 22½″ × 42″, 9 RM 24″ × 42″	15	Same as 1954 crop.
Rose Hall	38″	1	26	45	15 RM 24″ × 42″	15	One 6′ × 8′ Emico rotary filter for 1956 crop.
Gray's Inn Central ..	60″	1	10	15	2 RC 26″ × 60″, 12 RM 30″ × 60″	14	Same as 1954 crop.
Sevens	54″	1	26	200	12 RM 32″ × 60″	12	New equipment installed during 1955 crop: Steel headstocks for the last mill. Ronal trist thermofeed regulators on all boilers. Steam turbine driven injection pump. Power station consisting of two 500 kW. alternators driven by Bellis & Morcom steam engines. For 1956 crop: One 7½ ton Henderson tower crane. Two 6000 sq. ft. H.S. Babcock & Wilcox boilers, together with new chimney of 11′ 6″ dia. and 150′ high, to take care of all boilers.
United Estates	39″	1	24	75	3 RC 24″ × 42″, 9 RM 24″ × 42″	12	For 1956 crop: 2 new 24″ × 42″–3 roll mills to replace the existing ones.
Serge Island	48″	1	22	220	3 RC 26″ × 48″, 9 RM 24″ × 48″	12	For 1956 crop: Bach clarifier, 20′ diameter with 5 trays.
Vale Royal	42″	1	30	75	3 RC 25″ × 42″, 9 RM 24″ × 42″	12	For 1955 crop: evaporators increased by 2000 sq. ft. H.S. Small calandria vacuum pans replaced by 550 cu. ft. calandria pan. New equipment for 1956 crop: increasing boiler capacity by 1760 sq. ft. H.S. Adding additional tray to Bach clarifier. Increasing juice straining area by 6 sq. ft., and installing extra set of cane knives.
Appleton	42″	2	26/13	90/60	3 RC 25″ × 42″, 9 RM 25″ × 42″	12	New equipment installed and used during 1955 crop: increase in quad efficiency due to increase in quad preheater surface by 700 sq. ft. For 1956 crop: 1,800 gal. juice settling tanks and increase in capacity of Bach subsider (1 section), i.e., from 5 to 6.
Hampden	44″	2	20/16	100/50	12 RM 24″ × 48″	12	New equipment installed and used during 1955 crop: Eimco 8′ × 12′ rotary filter, better washing of cake. For 1956 crop: Ronald Trist juice level controls on quad. New boiler.
Bernard Lodge ..	87″	1	42	180	2 RC 34″ × 87, 6 RM 37″ × 84″, 3 RM 38″ × 84″	11	Same as 1954 crop.
Holland	36″	1	18	40	2 RC 20″ × 36″, 9 RM 22″ × 36″	11	Same as 1954 crop.
Long Pond	43″	1	33	60	9 RM 24¾″ × 48″	9	New equipment installed and used during 1955 crop: Thomson-Eisner furnace on Nos. 1 & 2 boilers; these 2 boilers were coupled up, making 1 boiler. For 1956 crop: induced draught for furnaces. Edward's hydraulics on all mills. Evaporators to be cleaned by chemical methods.

TABLE II

Factory Stations Capacities

		Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	United Estates	Serge Island	Vale Royal	Apple-ton	Hamp-den	Bernard Lodge	Holland	Long Pond	Totals and Averages
A. Per Ton Cane/Hour																						
Boilers																						
As Water Tube	sq. ft. H.S.	234	276	406	214	256	398	325	303	276	345	253	347	298	305	209	434	341	201	230	349	283
Superheater	sq. ft. H.S.	38	—	63	34	35	—	—	28	—	—	14	—	—	—	—	38	—	3	—	—	33
Juice Heaters	sq. ft. H.S.	30	24	24	40	26	35	25	36	31	62	28	30	38	28	25	37	37	33	46	45	33
Filters																						
Presses	sq. ft. F.A.	—	43	48	—	—	—	—	21	33	59	—	28	8	—	—	—	—	—	46	57	36
Rotary	sq. ft. F.A.	3·69	—	—	3·81	4·78	5·35	3·68	5·34	—	—	6·29	3·26	3·55	7·55	6·37	3·84	6·06	5·53	—	—	4·57
First Subsiders																						
Continuous	cu. ft. ..	44	80	72	78	101	99	59	107	69	86	70	57	68	40	79	76	80	93	—	94	73
Intermittent	cu. ft. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	24	—	—	41	—	117	—	47
Second Subsiders																						
Intermittent	cu. ft. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16	—	25	—	18
Evaporators																						
Cl. Juice Heaters	sq. ft. H.S.	10	—	—	—	10	—	—	12	—	—	—	—	—	14	18	—	—	—	23	12	
As Quad	sq. ft. H.S.	192	216	246	197	191	322*	203	189	266*	194	239	222	159	151	147	189	189	291	286	170	211
B. Per Ton Commercial Sugar/Hour																						
Evaporators																						
As Quad	sq. ft. H.S.	1,866	1,952	2,197	1,659	1,717	2,802	1,799	1,631	1,995	1,692	2,356	2,005	1,315	1,336	1,364	1,612	1,743	2,638	2,488	1,648	1,886
Vacuum Pans																						
As Calandria	sq. ft. H.S.	501	—	540	345	458	466	369	345	276	—	634	326	368	451	274	482	469	584	—	531	438
	cu. ft. ..	358	334	340	238	320	284	312	326	234	315	407	243	223	261	204	340	282	377	311	385	302
Syrup Tanks	cu. ft. ..	186	150	205	118	206	242	—	142	93	129	266	120	152	265	142	131	134	402	244	190	183
A and B Molasses Tanks																						
	cu. ft. ..	495	360	409	225	289	242	—	345	389	386	647	275	307	481	491	392	290	603	647	379	384
Crystallizers																						
Natural Cooling	cu. ft. ..	—	—	470	—	240	—	1,133	123	168	439	407	—	157	448	—	521	300	754	523	—	450
Air Cooled (Pitcairn)	cu. ft. ..	—	592	—	—	—	—	—	1,108	—	—	—	—	—	—	1,249	—	—	—	—	1,099	1,009
Water Cooled	cu. ft. ..	476	432	783	261	438	485	—	—	—	511	961	611	472	372	—	566	377	—	554	—	483
	sq. ft. C.A.	176	188	119	97	57	—	—	1,231	—	227	282	—	190	111	—	—	56	—	—	—	181
Pug Mill L.G. Sugars	cu. ft. ..	574	75	149	—	550	—	26	80	—	—	84	67	58	90	—	—	—	—	—	320	2,073
Water Heated	sq. ft. ..	—	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	—	—	—	—	14
Vapour Heated	sq. ft. ..	—	—	—	—	—	—	—	—	55	—	—	—	54	—	—	—	—	—	—	—	109
C. Centrifugals																						
High Grade Sugars	No. Off.	8	6	6	8–4	4	8	6	6	5	4	6	6	6	6	8	5	3	8	3	3	119
Size: Height	Ins. ..	20	18	20	20–20	24	18	18	18	18	18	18	18	18	18	14	24	24	24	18	24	20
Diameter	Ins. ..	42	30	42	42–42	40	36	30	30	36	36	36	36	30	36	30	40	42	40	30	42	37
Operating Speed	r.p.m. ..	1,200	1,200	1,000	1,000–1,500	50/850/1,750	1,000	1,400	1,100	1,200	1,100	1,220	1,200	1,300	1,000	1,200	1,000	1,200	1,100	1,200	1,200	1,130
Gravity Factor ..	.. ..	860	615	600	600–670	1,675	510	835	515	735	620	760	735	720	510	615	565	860	685	615	860	670
Low Grade Sugars	No. Off. ..	12	6	6–2	13	4	4	5	6	2–1	5	7	6	4	3	—	3	6	4	2	2	103
Size: Height	Ins. ..	20	18	20–24	20	24	18	18	18	18–18	18	18	18	18	20	—	18	18	24	18	24	20
Diameter	Ins. ..	42	30	42–42	42	40	42	30	30	30–36	30	36	36	36	42	—	30	30	42	30	42	36
Operating Speed	r.p.m. ..	1,200	1,200	1,000–750–1,500	1,000	1,650	1,300	1,400	1,100	1,200–1,200	1,200	1,140	1,200	1,100	1,000	—	1,500	1,200	1,400	1,200	1,200	1,210
Gravity Factor ..	.. ..	860	615	600–755	600	1,545	1,005	835	515	600–735	615	665	735	620	600	—	960	615	1,170	615	860	750
Affination	No. Off. ..	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Size: Height	Ins. ..	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
Diameter	Ins. ..	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
Operating Speed	r.p.m. ..	1,200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,200
Gravity Factor ..	.. ..	860	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	860
Refinery	No. Off. ..	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Size: Height	Ins. ..	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
Diameter	Ins. ..	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
Operating Speed	r.p.m. ..	1,200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,200
Gravity Factor ..	.. ..	860	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	860

* Quintuple.

TABLE III

Factory Quantities

	Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	United Estates	Serge Island	Vale Royal	Apple-ton	Hamp-den	Bér-nard Lodge	Hol-land	Long Pond	Totals and Averages
Tons Cane:																					
Estate Ground	597,230	50,529	111,248	302,747	126,992	119,934	72,806	30,282	46,883	36,687	58,992	79,138	60,053	48,907	74,533	53,412	74,394	143,132	34,862	58,265	2,181,026
Purchased Ground ..	143,501	6,151	66,605	333,881	77,066	12,149	63,065	47,408	42,029	32,060	78,979	123,925	58,557	65,050	34,933	25,803	84,270	48,068	8,518	31,837	1,383,855
Total Ground	740,731	56,680	177,853	636,628	204,058	132,083	135,871	77,690	88,912	68,747	137,971	203,063	118,610	113,957	109,466	79,215	158,664	191,200	43,380	90,102	3,564,881
Total for Sugar Manuf. ..	740,571	56,680	177,853	636,578	204,058	132,083	135,871	77,690	88,912	68,747	137,971	203,063	118,610	113,897	109,312	77,737	154,489	191,195	43,380	84,312	3,553,009
Bagasse:																					
Estimated Surplus Tons	10,000	—	500	14,552	1,800	—	—	200	—	—	14,700	—	—	150	—	—	—	—	—	—	41,902
Fuel:																					
Wood used: Factory »	259	900	—	20	—	—	230	600	—	1,018	—	300	350	200	700	902	—	—	2,840	4,320	—
Distillery »	—	—	—	—	—	—	170	—	—	—	—	—	—	—	—	4,448	5,497	—	320	—	23,074
Locomotives»	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lime Kiln »	—	—	—	735	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	735
Factory: Wood/Ton 96° Sugar »	—	0·14	—	—	—	—	0·01	0·07	—	0·13	—	0·01	0·02	0·02	0·06	0·10	—	—	0·57	0·49	—
Filter Cake »	23,900	868	2,612	14,224	4,618	3,627	1,985	1,709	1,460	1,211	4,600	5,392	2,980	3,023	2,617	746	4,087	4,965	559	1,033	86,216
Gals. Molasses:																					
Equivalent 88° Brix ..	4,933,226	280,535	823,590	3,260,962	1,064,016	669,614	789,787	405,702	364,047	358,440	823,099	1,020,618	541,496	501,320	503,960	364,486	994,979	862,643	216,666	420,341	19,199,527
Sugar Made:																					
"A" Grade .. .. Tons	—	—	—	—	—	—	—	—	—	—	—	—	453·30	—	—	—	—	—	—	—	453·30
"C" Grade .. .. »	—	—	—	—	—	2963·10	—	800·00	1495·00	—	550·00	—	3210·10	—	—	—	—	—	—	—	9018·20
"D" Grade .. »	220·00	1700·00	—	3600·20	3033·00	3126·90	1310·00	1000·00	1214·50	—	2700·00	2856·00	2582·00	1688·00	350·00	2800·00	600·00	2838·90	1600·00	300·00	33519·50
Refined .. .. »	9009·00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9009·00
Total Local Consumptn. »	9229·00	1700·00	—	3600·20	3033·00	6090·00	1310·00	1800·00	2709·50	—	3250·00	2856·00	6245·40	1688·00	350·00	2800·00	600·00	2838·90	1600·00	300·00	52000·00
Substitution .. »	789·00	—	2608·00	6307·80	—	—	692·00	—	—	1029·00	—	89·00	—	—	1199·00	—	1650·00	—	—	836·00	15199·80
Export .. .. »	66379·00	4577·20	17282·70	65647·00	19696·60	9086·20	13262·20	7182·00	9153·20	6815·80	10759·50	19513·60	8062·10	11180·90	10266·80	6459·30	14907·30	18212·60	3380·40	7527·00	329351·40
Official Crop Production »	76397·00	6277·20	19890·70	75555·00	22729·60	15176·20	15264·20	8982·00	11862·70	7844·80	14009·50	22458·60	14307·50	12868·90	11815·80	9259·30	17157·30	21051·50	4980·40	8663·00	396551·20
Lime Burnt .. Lbs.	2,211,507	100,800	231,860	715,130	310,057	141,540	133,280	80,416	83,085	63,136	208,230	187,314	152,880	154,245	132,776	60,477	170,911	328,820	66,560	123,573	5,656,597
Phosphate for Clarification .. .. »	—	—	—	—	—	—	—	—	—	—	—	—	—	—	560	—	—	—	—	—	560
Superphosphate »	—	—	3,360	—	—	—	—	—	—	—	—	—	—	—	—	—	672	—	—	—	4,032
Tri-Sodium Phosphate Lbs.	—	—	—	19,712	—	71	784	—	—	—	—	—	—	—	—	—	—	—	—	—	20,567

TABLE IV

Factory Analytical Data

	Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	United Estates	Serge Island	Vale Royal	Apple-ton	Hamp-den	Ber-nard Lodge	Hol-land	Long Pond	Island Averages
Cane																					
Pol %	12·04	12·39	12·71	13·24	13·00	12·85	13·21	13·10	15·06	13·21	11·65	12·78	13·39	13·57	12·43	13·32	13·00	13·13	13·20	12·28	12·83
Fibre %	13·85	14·07	15·69	14·51	15·12	12·94	15·59	14·36	12·61	15·28	16·78	15·47	14·20	15·42	14·34	12·51	14·12	14·40	14·37	14·57	14·51
Bagasse																					
Pol %	1·91	2·00	2·53	2·42	2·68	2·07	2·70	2·59	2·79	2·78	1·95	2·99	2·58	2·69	3·14	2·19	2·98	2·86	3·10	3·59	2·47
Moisture %	50·97	45·19	44·56	47·79	47·37	46·43	46·14	46·92	46·31	46·30	44·64	47·24	45·64	43·71	46·33	45·57	46·13	49·00	45·21	46·48	47·51
Juices																					
First Exp. °Brix ..	18·21	18·67	18·91	19·18	19·80	18·78	19·50	19·67	20·27	20·17	18·85	19·41	19·43	20·26	18·48	19·73	19·39	19·34	19·60	18·39	19·08
Pol % ..	14·78	15·43	16·39	16·36	16·67	15·98	16·90	17·22	18·26	17·17	15·63	16·45	16·84	17·62	15·89	17·54	16·62	16·61	16·75	15·80	16·18
App. Purity ..	81·16	85·38	86·67	85·30	84·19	85·08	86·67	87·54	90·08	85·15	82·92	84·76	86·67	86·97	85·98	88·90	85·71	85·88	85·46	85·92	84·79
Absolute °Brix ..	17·59	17·39	17·96	18·58	18·68	17·73	18·55	17·98	19·57	18·91	17·37	18·28	18·39	18·93	17·29	17·57	18·17	18·41	18·63	17·10	18·14
App. Purity ..	79·46	82·92	83·96	83·37	82·02	83·21	84·37	85·06	88·09	82·44	80·65	82·71	84·83	84·79	83·92	86·62	83·27	83·33	82·77	84·04	82·73
Mixed °Brix ..	16·38	15·40	16·36	15·76	16·71	15·39	16·69	16·46	17·22	16·03	15·94	16·24	16·11	16·98	15·12	15·80	16·66	16·36	16·75	14·77	16·16
App. Purity ..	79·78	83·31	84·61	83·88	82·47	83·52	84·84	85·42	88·38	83·09	81·22	83·19	85·29	85·22	84·39	86·96	83·79	83·68	82·99	84·43	83·17
R.S. Ratio ..	8·77	8·11	6·45	8·02	7·40	6·52	6·50	5·62	—	5·87	7·84	7·33	7·35	6·15	8·49	6·91	—	5·55	—	7·93	7·52
Last Exp. °Brix ..	3·05	3·29	4·86	4·43	4·13	4·83	4·89	5·40	4·26	5·25	5·90	4·97	3·78	5·80	6·42	4·26	5·38	5·89	8·15	7·28	—
App. Purity ..	72·90	75·01	74·90	75·17	75·93	76·56	77·91	80·05	81·92	74·31	71·70	76·88	78·18	79·31	78·39	79·90	76·94	78·78	79·67	79·91	—
Subsider																					
App. Purity ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	83·80	—	—
Evap. Supply																					
°Brix ..	15·59	15·76	15·42	15·86	16·66	15·23	16·60	16·70	17·38	15·99	15·55	16·28	17·37	16·84	15·14	16·57	16·60	16·36	16·68	15·25	—
App. Purity ..	80·65	83·69	85·54	84·17	83·61	83·50	85·30	85·83	88·49	83·29	81·93	84·03	85·71	86·58	86·06	87·81	83·85	85·15	83·22	84·85	—
Syrup °Brix ..	54·92	60·45	56·59	59·89	63·42	62·12	57·37	59·13	62·08	63·37	54·83	64·78	65·24	54·30	61·28	48·82	59·96	61·91	60·35	58·95	—
App. Purity ..	79·47	84·06	86·22	85·21	83·27	83·74	85·77	86·61	89·89	84·14	82·62	84·69	86·25	86·74	85·70	88·41	84·71	85·53	84·11	84·96	—
Filter Cake Pol % ..	1·61	3·98	4·13	1·29	2·59	1·54	3·18	2·10	2·74	4·01	2·20	1·66	1·78	4·03	3·23	1·80	1·98	2·10	5·81	5·37	1·84
Moisture % ..	79·01	73·28	—	77·48	76·22	76·32	72·99	70·48	65·76	60·35	55·26	75·39	77·04	—	76·24	78·58	72·98	73·92	66·99	—	75·03
Sugars																					
(Export) Pol % ..	96·49	—	—	96·57	97·68	97·21	97·28	97·09	97·21	97·09	97·15	97·10	97·05	96·86	—	97·42	98·10	97·45	96·51	—	—
(All) Pol %	96·91	96·55	97·46	96·57	97·66	97·32	97·24	97·29	97·36	97·09	96·97	97·07	97·25	96·77	97·02	97·17	98·09	97·47	96·44	97·62	97·08
(Export) Moisture % ..	0·96	—	—	0·94	0·58	—	0·90	0·99	1·03	0·85	0·81	0·68	0·89	0·92	—	0·87	0·87	0·90	0·91	—	—
(All) Moisture % ..	0·85	0·91	0·92	0·94	—	—	0·90	0·98	1·03	0·85	0·91	0·69	—	0·93	0·61	0·88	0·87	0·89	0·92	0·59	—
Final Molasses																					
°Brix	93·72	86·76	88·25	89·62	90·98	90·43	88·71	87·24	91·58	88·34	87·90	87·92	89·29	85·76	84·34	84·26	84·65	91·81	85·48	85·63	89·74
App. Purity	34·25	33·98	31·66	30·67	33·42	33·47	37·61	31·53	34·79	37·21	31·75	30·38	30·26	35·09	30·92	30·76	29·77	38·19	35·87	30·62	32·95

TABLE V

FACTORY CONTROL DATA

	Mony-musk	Rich-mond/ Lland-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	United Estates	Serge Island	Vale Royal	Apple-ton	Hamp-den	Ber-nard Lodge	Hol-land	Long Pond	Island Averages
Control Classification																					
Cane																					
Fibre/Pol Ratio	1·15	1·14	1·23	1·10	1·16	1·01	1·18	1·10	1·19	1·16	1·44	1·21	1·06	1·14	1·15	0·94	1·09	1·10	1·09	1·19	1·13
Tons Cane/Ton 96° Sugar ..	9·60	8·98	8·81	8·38	8·83	8·58	8·77	8·51	7·39	8·65	9·75	8·94	8·18	8·78	9·15	8·29	8·81	8·95	8·67	9·57	8·86
Demarara Index	21·64	21·37	21·52	21·62	21·83	21·43	21·98	21·61	22·45	21·86	21·40	21·72	21·57	22·35	21·58	21·61	21·81	22·08	21·87	21·85	21·69
Java Ratio	81·46	77·73	77·55	80·93	77·98	80·41	78·17	76·07	82·48	76·94	74·54	77·69	79·51	77·01	78·23	75·94	78·22	79·05	78·81	77·72	79·30
Milling																					
Tons Cane/Hour	162·42	30·04	67·12	177·76	62·74	40·38	40·71	28·08	28·97	23·22	53·28	66·31	42·22	39·76	31·57	39·07	49·50	72·28	17·51	26·53	59·56
Tons Fibre/Hour	22·50	4·23	10·53	25·80	9·49	5·22	6·35	4·03	3·65	3·55	8·94	10·25	6·00	6·13	4·53	4·80	6·99	10·41	2·52	3·87	8·64
Imbibition % Cane	17·64	19·34	16·51	24·36	19·17	21·28	18·34	16·66	19·47	23·37	17·12	19·21	20·04	17·56	19·19	17·28	15·31	19·95	16·90	19·58	19·46
Imbibition % Fibre	127·36	137·50	105·19	167·86	126·79	164·45	117·66	116·09	154·42	152·96	102·01	124·20	141·12	113·83	133·75	138·19	108·44	138·57	117·64	134·43	134·11
Pol Extraction	95·26	95·64	94·01	94·59	93·66	95·90	93·69	94·30	95·35	93·56	94·67	92·59	94·64	94·23	92·70	96·03	93·53	93·38	93·37	91·31	94·31
Reduced Pol Extraction ..	95·79	96·20	95·40	95·45	94·92	96·06	95·12	95·14	95·40	94·90	96·22	94·22	95·37	95·48	93·77	96·03	94·38	94·38	94·36	92·72	95·21
Absolute Juice Lost % Fibre ..	29·48	26·63	32·19	31·87	35·59	27·58	34·16	33·99	32·22	35·71	26·43	40·49	32·39	31·65	43·61	27·81	39·35	39·35	39·51	50·96	33·52
Bagasse % Cane	29·85	26·98	30·14	29·62	30·79	25·43	30·93	28·80	25·08	30·59	31·88	31·65	27·81	29·15	28·89	24·20	28·63	30·40	28·23	29·71	29·47
Time Grinding % Gross G.T. ..	77·47	74·18	71·65	83·91	73·39	80·90	83·99	78·92	85·92	82·35	78·55	75·51	88·16	74·25	73·76	80·55	78·34	78·96	62·76	79·82	77·99
Purity Drop																					
First Expressed—Mixed ..	1·38	2·07	2·06	1·42	1·72	1·56	1·83	2·12	1·70	2·06	1·70	1·57	1·38	1·75	1·59	1·94	1·92	2·20	2·47	1·49	1·62
First Expressed—Last Exp. ..	8·26	10·37	11·77	10·13	8·26	8·52	8·76	7·49	8·16	10·84	11·22	7·88	8·49	7·66	7·59	9·00	8·77	7·10	5·79	6·01	—
Boiling House																					
Tons °Brix/Hour	23·35	4·27	9·48	26·54	9·27	5·96	5·94	4·06	4·71	3·45	7·24	9·43	6·28	5·97	4·31	5·64	7·00	10·59	2·60	3·52	8·66
Tons 96° Sugar/Hour	16·91	3·35	7·62	21·22	7·11	4·70	4·64	3·30	3·92	2·69	5·46	7·42	5·16	4·53	3·45	4·62	5·47	8·08	2·02	2·77	6·72
Filter Cake % Cane	3·23	1·53	1·47	2·23	2·26	2·75	1·46	2·20	1·64	1·76	3·33	2·65	2·51	2·65	2·39	0·96	2·65	2·60	1·29	1·23	2·43
Gals. Final Molasses at 88° Brix/ Ton 96° Sugar	63·97	44·43	40·78	42·90	46·02	43·50	50·96	44·46	30·26	45·08	58·14	44·94	37·36	37·65	41·13	38·89	56·76	40·36	43·31	47·71	47·80
Efficiency (W.C.)	96·98	98·05	98·35	99·11	97·61	98·54	95·27	98·00	95·46	97·83	98·16	98·71	99·48	91·84	98·28	96·29	97·16	94·95	97·85	96·63	97·46
Purity Rise: Mixed—Syrup ..	0·31	0·75	1·61	1·33	0·80	0·22	0·93	1·19	1·51	1·05	1·40	1·50	0·96	1·52	1·31	1·45	0·92	1·85	1·12	0·53	—
Pol Balance (In Cane)																					
% in Sugars	83·02	86·27	85·73	86·55	83·65	87·05	82·87	86·08	86·23	84·08	84·47	84·02	87·64	80·55	84·38	86·91	83·83	81·88	83·87	81·71	84·48
% in Molasses	10·93	7·76	6·65	6·85	7·73	7·59	9·54	7·23	5·67	8·48	9·33	6·89	6·02	6·39	6·60	7·59	8·50	7·88	7·67	7·17	7·97
% in Filter Cake	0·41	0·49	0·48	0·21	0·45	0·33	0·36	0·35	0·30	0·54	0·63	0·34	0·33	0·79	0·62	0·13	0·40	0·42	0·57	0·54	0·35
% in Bagasse	4·74	4·36	5·99	5·41	6·34	4·10	6·31	5·70	4·65	6·44	5·33	7·41	5·36	5·77	7·30	3·97	6·47	6·62	6·63	8·69	5·69
Undetermined	0·90*	1·12	1·15	0·98	1·83	0·93	0·92	0·64	3·15	0·46	0·24	1·34	0·65	6·50	1·10	1·40	0·80	3·20	1·26	1·89	1·51

* Includes 0·10 Refinery Undetermined Loss.

TABLE VI

NON-FACTORY STOPPAGES AND TIME GRINDING % GROSS GRINDING TIME

Factory	Field stoppages	Premeditated	Labour	Week-end	Nett grinding time	Time grinding
Monymusk	1·19	9·35	5·01	4·85	79·60	77·47
Richmond/Llandovery	2·62	—	—	10·00	87·38	74·18
Jamaica Sugar Estates	10·65	1·80	—	8·38	79·17	71·65
Frome	0·03	1·29	9·71	2·64	86·33	83·91
New Yarmouth	2·84	1·06	10·02	11·12*	74·96	73·39
Caymanas	2·34	3·82	—	6·25	87·59	80·90
Innswood	0·63	1·99	—	7·21	90·17	83·99
Barnett	2·27	2·40	2·31	7·90	85·12	78·92
Worthy Park	0·81	1·04	—	7·12	91·03	85·92
Rose Hall	0·09	1·24	—	8·19	90·48	82·35
Gray's Inn Central	5·18	0·73	—	10·00	84·09	78·55
Stevens	6·14	0·91	—	9·32	83·63	75·51
United Estates	0·07	1·37	—	5·78	92·78	88·16
Serge Island	4·35	1·48	1·08	6·14	86·95	74·25
Vale Royal	0·40	1·92	—	9·27	88·41	73·76
Appleton	3·83	3·25	—	8·03	84·89	80·55
Hampden	3·97	1·78	—	5·97	88·28	78·34
Bernard Lodge	6·30	1·19	—	5·22	87·29	78·96
Holland	9·21	3·54	—	9·82	77·43	62·76
Long Pond	0·39	1·50	4·36	9·40	84·35	79·82
Island Averages	3·06	2·30	2·24	7·21	85·19	77·99

NOTE.—Gross Grinding Time = Interval between commencement and termination of milling.
Nett Grinding Time = Possible grinding time.
Time Grinding = Actual Grinding Time.
* Includes 5·90% rain.

TABLE VII

FACTORY STOPPAGES AND TIME GRINDING % NETT GRINDING TIME

Factory	Machinery	Chokes	Juice room	Steam	Washing	Other reasons	Time grinding
Monymusk	1·47	0·02	—	—	—	1·18	97·33
Richmond/Llandovery	7·88	0·98	2·56	3·03	0·66	84·89	84·90
Jamaica Sugar Estates	6·00	0·49	0·07	—	—	2·95	90·49
Frome	2·05	0·17	0·33	0·05	0·05	0·15	97·20
New Yarmouth	1·24	0·06	—	0·31	0·30	0·19	97·90
Caymanas	6·17	0·61	0·26	0·17	—	0·43	92·36
Innswood	4·97	0·56	0·85	0·14	—	0·35	93·13
Barnett	4·32	0·90	0·33	0·39	—	1·37	92·69
Worthy Park	2·69	0·07	0·79	1·75	—	0·32	94·38
Rose Hall	6·58	1·10	0·21	0·75	0·03	0·32	91·01
Gray's Inn Central	2·72	0·47	2·42	0·32	—	0·66	93·41
Sevens	4·86	0·94	0·19	0·47	—	3·26	90·28
United Estates	2·51	0·30	0·17	0·24	—	1·76	95·02
Serge Island	11·90	—	1·04	0·97	—	0·71	85·38
Vale Royal	9·50	0·79	0·50	2·36	—	3·42	83·43
Appleton	2·60	0·14	1·90	0·45	—	0·03	94·88
Hampden	4·22	1·82	2·60	1·45	—	1·18	88·73
Bernard Lodge	8·31	—	—	—	0·35	0·88	90·46
Holland	9·63	1·07	4·90	2·01	0·20	1·14	81·05
Long Pond	3·97	0·15	0·67	0·46	—	0·12	94·63
Island Averages	5·14	0·53	0·91	0·74	0·04	1·09	91·55

SUMMARY

Time Grinding	59873·45 Hours		
Factory Stoppages	5525·09	»	= 7·20% Gross Grinding Time.
Nett Grinding Time	65398·54	»	
Non-Factory Stoppages	11369·19	»	= 14·81% Gross Grinding Time.
Gross Grinding Time	76768·13	»	

PART 3

DISTILLERY DATA 1955 CROP

TABLE I

Distillery Capacities

		Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	United Estates	Serge Island	Vale Royal	Apple-ton	Hamp-den	Ber-nard Lodge	Hol-land	Long Pond	Totals and Averages
Fermentation																						
Vats	No. of	30	43	10	43	37	15	30	17	10	13	9	21	15	10	20	—	56	44	18	59	500
Total Capacity	gal.	362,000	48,000	125,000	171,800	61,500	75,000	71,943	36,000	20,000	39,000	90,000	35,546	42,600	70,000	34,230	—	98,000	132,000	16,200	78,000	1,606,819
Dunder Boxes	No. of	4	8	6	7	5	2	4	10	5	12	—	5	4	3	8	—	5	12	3	9	112
Total Capacity	gal.	12,000	16,000	65,000	19,600	5,500	42,400	10,000	10,000	9,000	14,400	—	18,233	8,000	10,000	8,800	—	10,000	36,000	2,500	4,000	301,433
Cooling Surface	sq. ft.	—	708	150	—	—	—	—	—	—	—	—	957	—	—	—	—	—	—	—	—	1,815
Distillation																						
Wash Preheater	No. 1																					
Capacity	gal.	2,200	1,500	—	3,800	4,000	3,000	—	Tubular	1,500	—	Cont.	—	—	—	850		—	3,000	—	—	19,850
	sq. ft. H.S.	135	831	—	166	—	100	—	—	—	—	330	—	—	—	40		—	250	—	—	1,852
	No. 2																					
Capacity	gal.	2,200	1,500	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	3,700
	sq. ft. H.S.	135	585	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	720
Still No. 1																						
Loading Capacity	gal.	2,000	1,500	2,500	1,200	1,500	1,500	2,500	1,800	1,300	1,500	—	1,780	1,237	1,500	1,500		2,000	1,380	1,000	1,200	28,897
	sq. ft. H.S.	135	—	104	72	150	105	—	200	65	100	—	188	98	200	80		—	112	—	—	1,609
L.W. retort charge	gal.	250	180	350	150	180	175	300	220	150	180	—	230	140	175	100		250	168	120	120	3,438
	sq. ft. H.S.	—	—	4·2	—	—	3·6	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	200	150	240	120	150	150	250	180	120	150	—	190	120	140	64		200	140	100	100	2,764
	sq. ft. H.S.	—	—	—	—	—	3·6	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—	2,660	766	—	—	—	—	470	—	—	—	355	752	220	—		—	—	—	—	5,223
Still No. 2																						
Loading Capacity	gal.	2,000	1,500	2,500	2,000	1,500	1,500	—	—	—	1,500	—	1,780	1,237	3,500	1,500		1,500	1,380	—	800	24,197
	sq. ft. H.S.	135	—	104	120	150	105	—	—	—	95	—	136	98	98	80		—	112	—	—	—
L.W. retort charge	gal	250	180	350	240	180	175	—	—	—	180	—	230	140	350	100		200	168	—	100	2,843
	sq. ft. H.S.	—	—	4·2	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	200	150	240	220	150	150	—	—	—	150	—	190	120	280	64		150	140	—	80	2,284
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—	1,916	766	—	—	—	—	—	—	—	—	351	752	185	—		—	—	—	—	3,970
Still No. 3																						
Loading Capacity	gal.	2,000	—	2,500	1,800	1,800	—	—	—	—	—	—	—	—	—	—		1,500	1,380	—	1,500	12,480
	sq. ft. H.S.	135	—	104	86	115	—	—	—	—	—	—	—	—	—	—		—	112	—	—	552
L.W. retort charge	gal.	250	—	350	240	140	—	—	—	—	—	—	—	—	—	—		200	168	—	150	1,498
	sq. ft. H.S.	—	—	4·2	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H. W. retort charge	gal.	200	—	240	220	120	—	—	—	—	—	—	—	—	—	—		150	140	—	180	1,250
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—	—	766	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 4																						
Loading Capacity	gal.	2,000	—	—	1,800	1,500	—	—	—	—	—	—	—	—	—	—		1,000	1,500	—	—	7,800
	sq. ft. H.S.	135	—	—	88	150	—	—	—	—	—	—	—	—	—	—		—	125	—	—	—
L.W. retort charge	gal.	250	—	—	240	180	—	—	—	—	—	—	—	—	—	—		150	180	—	—	1,000
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	200	—	—	220	150	—	—	—	—	—	—	—	—	—	—		80	150	—	—	800
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 5																						
Loading Capacity	gal.	—	—	—	2,000	—	—	—	—	—	—	—	—	—	—	—		—	2,000	—	—	4,000
	sq. ft. H.S.	—	—	—	120	—	—	—	—	—	—	—	—	—	—	—		—	150	—	—	270
L. W. retort charge	gal.	—	—	—	240	—	—	—	—	—	—	—	—	—	—	—		—	250	—	—	490
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	—	—	—	220	—	—	—	—	—	—	—	—	—	—	—		—	200	—	—	420
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C. S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 6																						
Loading Capacity	gal.	—	—	—	2,000	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	2,000
	sq. ft. H.S.	—	—	—	120	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	120
L. W. retort charge	gal.	—	—	—	240	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	240
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	—	—	—	220	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	220
	sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Continuous Still																						
No. of columns		2	—	—	2	—	1	2	—	—	—	1	—	—	—	—		—	—	—	—	8
Wash/24 hours	gal.	48,000	—	—	5,000	—	40,000	25,000	—	—	—	40,000	—	—	—	—		—	—	—	—	158,000

Not Available

TABLE II

Distillery Quantities

		Mony-musk	Richmond/ Llandovery	Frome	New Yarmouth	Innswood	Worthy Park	Rose Hall	Gray's Inn Central	Serge Island	Vale Royal	Hampden	Bernard Lodge	Holland	Long Pond
Cane Juice Used	tons	153	—	48	—	—	—	—	—	—	139	3,518	—	—	4,887
	gals.	—	—	10,015	—	—	—	—	—	—	29,340	738,000	—	—	1,030,564
Total Sugars as R.S.	lbs.	56,651	—	15,837	—	—	—	—	—	—	45,091	—	—	—	1,518,850
Molasses Used	tons	835	840	1,648	774	3,471	750	443	1,472	1,332	1,205	—	4,510	166	1,392
	gals.	—	128,968	249,260	116,391	537,953	112,400	67,780	225,607	206,287	187,294	536,362	675,800	25,605	214,890
Equiv. 88° Brix	gals.	135,470	126,713	257,331	122,176	513,546	114,985	67,865	195,432	203,418	176,703	515,943	722,209	24,872	207,775
Total Sugars as R.S.	lbs.	1,180,802	1,063,709	2,143,142	—	4,395,302	—	550,388	1,843,404	1,641,584	1,509,177	—	5,930,743	—	1,771,701
Total R.S. used as R.S.	lbs.	1,237,453	1,063,709	2,158,979	942,689	4,395,302	—	550,388	1,616,327	1,641,584	1,554,268	—	5,930,743	—	3,290,551
Wash: Set	gals.	900,000	1,009,500	1,721,400	708,900	4,388,128	562,000	411,000	1,624,596	—	1,399,100	3,001,700	5,081,910	144,000	1,929,200
Distilled	gals.	844,000	1,009,500	1,511,200	650,400	3,096,961	549,600	366,300	1,393,651	1,023,500	1,219,500	3,000,700	4,904,740	144,000	1,929,200
Rum as Distilled															
Bulk	gals.	41,692	48,910	92,396	44,986	114,049	23,075	18,504	—	42,660	51,880	145,716	237,939	5,654	118,846
Proof	gals.	58,035	71,897	129,354	62,980	172,766	31,644	26,047	—	62,454	77,300	201,088	352,150	8,475	175,931
As Packaged Bulk	gals.	39,635	47,291	90,645	—	121,629	22,212	18,888	—	—	52,592	140,170	234,770	5,691	121,006
Alcohol as Distilled															
Bulk	gals.	—	—	—	—	3,799	—	—	64,301	—	—	—	—	—	—
As Packaged Bulk	gals.	—	—	—	—	4,322	—	—	—	—	—	—	—	—	—
As Distilled Proof	gals.	—	—	—	—	6,026	—	—	107,897	—	—	—	—	—	—
Absolute Alcohol	gals.	—	—	—	—	102,075	—	—	61,573	—	—	—	—	—	—
Anhydrous Alcohol	gals.	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TABLE III

Distillery Analytical and Control Data

	Monymusk	Richmond/ Llandovery	Frome	New Yarmouth	Innswood	Rose Hall	Gray's Inn Central	Vale Royal	Bernard Lodge	Long Pond
Cane Juice										
Total Sugars as R.S. %	16·49		14·86	—	—	—	—		—	13·88
°Brix	17·77		15·74	—	—	—	—		—	14·67
Molasses										
Total Sugars as R.S. %	63·13		58·04	54·36	56·53	55·34	56·71		58·78	56·89
°Brix	93·60		89·99	91·58	84·78	88·31	87·64		91·77	85·69
Dunder										
°Brix	11·94		12·46	13·90	8·59	16·69	—		14·03	19·63
% Acidity (as Acetic)	1·37		2·35	—	0·86	1·43	—		1·58	2·69
pH	—		—	3·90	—	—	—		—	—
Live Wash										
°Brix	18·94		17·70	18·16	16·50	19·77	16·70		17·98	20·70
Total Sugars as R.S. %	12·81		11·69	10·92	9·39	9·80	11·34		10·87	12·46
% Acidity (as Acetic)	0·56		0·95	—	0·54	0·57	—		0·41	1·37
pH	—		—	4·70	4·80	—	4·74		—	—
Dead Wash										
°Brix	8·99		7·62	7·98	7·97	10·20	6·00		8·21	10·79
Total Sugars as R.S. %	1·03		1·10	1·15	0·95	0·96	0·70		1·00	1·18
% Acidity (as Acetic)	1·27		1·63	—	1·10	1·10	—		1·21	2·21
pH	—		—	4·03	—	—	3·79		—	—
% Proof Spirit	7·57		9·95	9·69	7·06	7·89	7·99		8·59	9·79
Rum										
Overproof	—		40·00	40·00	51·48	48·00	67·80*		48·00	48·03
Fermentation										
Attenuation °Brix	9·95		10·08	10·18	8·53	9·57	10·70		9·77	9·91
% Conversion	91·92		90·59	89·47	89·88	90·20	93·83		90·80	90·53
Lbs. R.S./gal. Abs. Alc. in Wash	31·85		22·10	26·21	35·03	26·27	24·76		23·81	30·54
Distillation										
Gals. Abs. Alc. in Dist./gal. Abs. Alc. in Wash	0·92		0·86	1·00	0·81	0·92	0·94		0·84	0·93
Overall										
Lbs. R.S./gal. Abs. Alc. in Dist.	7·39		29·25	26·23	43·02	36·94	26·25		29·51	32·77
Recovery % Theoretical	4·13		53·09	58·64	35·75	41·64	58·59		52·12	46·93
Lbs. R.S./gal. Proof Alc. in Dist.	2·32		16·69	14·97†	24·54	21·13	14·98		16·84	18·70
Gals Mol. at 88° Brix/gal. Proof Alc.	33		1·99	1·94	2·87†	2·61	1·81		2·05	1·18

Not possible to carry out full Chemical Control

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* Alcohol.
† Includes Alcohol manufactured.

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